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ADDRESSES.

CHAIRMAN'S ADDRESS.

Delivered before the Section on Ophthalmology at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5–8, 1896.

BY LUCIEN HOWE, M.D.

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It is one of the duties of the chairman of each Section of this ASSOCIATION to present an "Address" at the opening of the session in his department.

Perhaps this custom would be more honored in the breach than the observance and in the present instance the time would be better employed by proceeding at once to the inviting list of papers which the Executive Committee has prepared. But when one has been complimented by election to the chairmanship of the Section which is generally conceded to be the most active of all the Sections in this ASSOCIATION, it ill becomes him to avail himself of any excuse and fail to acknowledge the honor thus conferred upon him.

Indeed, he assumes a definite responsibility in accepting this position. For while it is manifestly impossible for him to present the barest outline of the year's advance even in this one small corner of the field of medical science, still, it is his duty to observe the trend of ophthalmologic thought, to point out, if he can, the directions in which the lines of progress may be advanced, or, what is yet more important, to sound the alarm if there is danger of any in our ranks going so far and so fast in their eagerness for achievement as to overstep the limits of scientific accuracy, with the inevitable result of retreat, in confusion and in shame, to a more moderate and secure position. With this in view, I feel impelled to ask your attention, very briefly, to a growing tendency among us to regard difficulties of the accommodative and muscular apparatus as entirely local. I would fain say a word for that nearly forgotten factor, the "general health." This introduction again of a threadbare subject almost demands apology, especially as, for the sake of clearness later, it is necessary now at the outset to repeat definitions which have been agreed upon long ago. Thus, when we say that the pathologic conditions above mentioned produce asthenopia, it is essential that we remember not only what that means, but also the three shades of its meaning.

We must remember that asthenopia is simply the name of a certain group of symptoms, namely, difficulty or discomfort when attempting to use the eyes for near work, occasionally a little redness or smarting of the conjunctiva, and nearly always headache—then called ocular headache. Moreover, we must remember that this group of symptoms may be dependent upon at least three distinct causes. These we have long ago recognized as:

1. Accommodative asthenopia, which, being due to some variation from the normal shape of the typical eye, as near- or far-sightedness, or to astigmatism in some form, necessitates an unusual action of the ciliary muscle and is, of course, to be corrected with a concave or convex glass.

2. Muscular asthenopia. While this is often associated with the accommodative form, it may occur when the globe is perfectly normal. It is due to an unnatural action of the muscles on the outside of the eye, to the recti and possibly to the oblique; it is recognized by the various tests for unequal muscular balance, and is corrected by means of prisms, by tenotomies, partial or total, or by muscular advancement.

3. Central or neurasthenic asthenopia. In this condition no variation from the normal standard can be discovered either as regards the action of the ciliary muscle or the recti or oblique muscles. Or, indeed, if any such abnormal condition did exist, the asthenopia persists after the patient has received full correction of the difficulty by means of glasses or otherwise.

While it may appear puerile to repeat elementary facts at a meeting of ophthalmologists, it is better to err in that respect than to risk the confusion that arises from nebulous ideas defined in vague terms.

This, especially for the reason that, in order to establish the point in question, it is more important to arrange in proper sequence a few facts already well known than to bring forward any that are new.

Now, the object of this paper, as above stated, is to call attention to the too great tendency with most ophthalmologists to consider their cases of asthenopia as belonging to the first or second class. In other words, we look upon the causes of the symptoms as more local than general, as is natural enough with those who, like ourselves, are obliged to focus their entire attention upon a small field of practice. Especially is this true because we naturally see a large proportion of cases of asthenopia which do require only local treatment. Indeed, in a few rare instances, ametropia or a faulty muscular balance may produce by reflex action pathologic symptoms in distinct organs, which symptoms have apparently been relieved by the use of suitable glasses. But let us ask ourselves more exactly concerning accommodative and muscular asthenopia and it will be evident, I think, how often we deal with the third form, how often this becomes in the history of the case what the *Tiers Etat* was to the French Revolution, the element unrecognized or reluctantly acknowledged at first, but dominant in the end.

Take accommodative asthenopia first. In high degrees of far-sightedness or especially of astigmatism, we learned long ago to expect ocular headaches or their allied symptoms. We have prescribed suitable glasses and the asthenopia vanished, as if by magic. Then, later, we learned that in certain individuals lesser degrees, even very minute degrees, of variation from the normal type also gave rise to the

same symptoms, and required likewise to be corrected with glasses. This is the positive evidence. But we should look at the negative evidence as well. For if these same anomalies, which are mathematically definite, produced invariably the same effect, as we ought to expect if the asthenopia springs from local causes, then there would be but very few men, women or children not wearing glasses. I know of no figures more instructive on this point than those obtained by Roosa in his examination of the refraction of a hundred persons who supposed their eyes to be perfectly normal. These individuals, it will be remembered, were of various ages and occupations, and no person had both eyes absolutely perfect, as shown by the combined tests of the ophthalmometer, ophthalmoscope and test glasses, while only 1 per cent. had one eye in that condition. Among them, too, several persons were found having as high as one and one-half or two dioptries of either myopia, hypermetropia or astigmatism, who were blissfully unconscious of their defects.

While thus on the one hand, we find constantly such variations from the normal standard to exist without headache or any symptoms of accommodative asthenopia, so, on the other hand, are we unfortunately familiar with the fact that when the very best and most exact corrections have been made, even under atropin, this asthenopia obstinately persists in almost as great a degree as without the correction.

Next, let us glance at the state of our knowledge concerning muscular asthenopia and arrange before us, in similar sequence, a few well-known facts. We can formulate these in the same manner by saying that while asthenopia usually exists with unequal muscular balance, the same symptoms also frequently persist when that fault can not be detected by any methods of measurement now at our command, or when, having been present formerly, it has been corrected. On the other hand, eyes which have always been considered perfect, which never gave their owners a suspicion of asthenopia, have occasionally been found, on examination, to be in a state of exceedingly unequal muscular balance. In these cases, even though exceptional, of course, I am careful not to include those in which any existing error of refraction had not been previously fully corrected under a mydriatic, no matter how slight that variation from the normal had seemed to be. Moreover, in this connection, I do not ignore at all that very important distinction which I think should always be made between the sthenic and asthenic varieties of muscular asthenopia.

In other words, we have for muscular asthenopia just what we found before for accommodative asthenopia, namely, that some considerable variations from the normal type, which theoretically should be corrected, do not demand that, the owners of these eyes being perfectly comfortable without glasses. And on the contrary, in many individuals when the variations from that type are very slight, indeed, practically not measurable, the asthenopia continues in spite of every effort, the patients wandering from one office to another in a vain search for relief.

Now, the question naturally arises, why are we obliged to make such an exact adaptation of glasses, or to correct the muscular condition so carefully, with one class of individuals, and not with the other? Under these circumstances we fall back upon our third factor, so conveniently indefinite just then, by saying that the difference is in the "accommodative power" of the individuals, or in the "strength of the muscles" or "*vis a tergo*," as we variously term it. Evidently, though, this is simply using a phrase to cover our ignorance.

In this dilemma, unfortunately too common, we must simply ask ourselves honestly what other condition exists, or what conditions combine, in that individual, to produce the asthenopia? This is a branch of pathology which, as I said at the outset, is too much neglected, and in regard to which I venture to speak only with caution, but it seems safe to say that what we understand in general as anemia, as imperfect assimilation and as nerve exhaustion, are three important elements which, in varying degrees, separately or together, produce central asthenopia.

Several years ago I measured, with the spectroscopic bands, the amount of hemoglobin present in individuals suffering from certain forms of eye disease, a portion of the results being published then in the Transactions of the Medical Society of the State of New York. It was quite surprising to observe how frequently improvement in these cases corresponded with a return to the normal condition of the blood. I can speak with no such certainty concerning the relation between the condition of the blood and central asthenopia, but it is fairly reasonable to infer that the pallid specimens of humanity who come for glasses and who find relief from a half or possibly a quarter of a dioptrie, or from correspondingly weak prisms, would have strong eyes if they had also more nearly normal blood.

Next, as to imperfect nutrition. There is but little doubt that this also plays an important rôle in aggravating the asthenopia in certain individuals. In order to test this, about three years ago I placed in a corner of my office a pair of the small size Fairbanks scales, noting the weight of those patients to whom very weak glasses proved beneficial, and was not surprised to find that as appetite improved and weight was gained, the glasses could often be dispensed with.

Finally, as to the effect of the so-called "nervous" condition of the individual. It would require too long a digression to discuss that in any detail, nor is it necessary, as I think it will be admitted that this is one element, and an important one, in relation to asthenopia. In this connection the so-called psychic effect of glasses, of manipulations or of "operations," can not honestly be passed by without some notice. It is probable that the mere wearing of a pair of spectacles with simple plane glasses has an effect upon the minds of certain individuals, similar to that produced by a hypnotic suggestion. This observation was made by Dr. Holt at a recent meeting of the American Ophthalmological Society, and acting on this hint I provided myself with a number of pairs of plane glasses. These have been lent to those who imagined they should have spectacles, or have been exchanged for weak glasses before prescribed, in a sufficient number of instances to prove beyond question this psychic element. Moreover, I have yet to meet with the person who fails to appreciate the advantage of such a trial, or one who is not glad to be rid of any glasses, when the reason for the experiment has been frankly and fully explained. Most practitioners also have heard reports of improvement from their imaginative patients almost before treatment was begun, and certainly the results from some of the methods of making partial tenotomies, can be

accounted for more rationally in this way than in any other.

There are, of course, other general causes tending to produce central asthenopia which might be considered in this connection, but which must of necessity be omitted. It should be noted, however, that while the error of refraction which produces accommodative asthenopia remains nearly the same through life, and while, also, the unequal balance belonging to muscular asthenopia varies comparatively little, on the other hand, those conditions of the general health which accompany central asthenopia do change readily. The application of this fact is practical and familiar. Convex glasses or prisms which once gave the patient relief can be changed for those which are weaker, or are voluntarily laid aside altogether when the health of the patient has improved. In certain cases after we have gone through the usual exact routine with ophthalmoscope, ophthalmometer and various muscular tests, it is true we do succeed in detecting some slight anomalies which have existed perhaps for years, and which are aggravated only temporarily by some such fault in the general condition as has been indicated above, and which the family physician himself has overlooked. Under such circumstances if we then also neglect the general health of the patient and set ourselves at work to correct only the error of refraction or the muscular balance, we may be sure of obtaining little or no improvement at first. But as the patients are patient, and consent to rest, or to exchange a sedentary life for fresh air, or a life of hard work for one with more relaxation, in such cases relief does come, but comes very gradually, and this improvement must be accredited more to nature's tonics and time than to any skill in prescribing glasses or to "exercises," or to any of those measures which in other individuals are undoubtedly of benefit.

I know that this will be considered by many as heresy, but it is none the less the truth. It behooves us to recognize it frankly and to be on our guard accordingly.

We have reason to congratulate ourselves upon the advances made during the last few years, especially in America, in the methods of determining and of treating accommodation and muscular asthenopia. But let us beware of rapid progress in these two lines, at the neglect of a third often equally important.

To avoid that, for our own credit, and for the greater comfort of our patients, I venture to recall these facts, already familiar, concerning the relation of the general health to asthenopia.

CHAIRMAN'S ADDRESS.

Read in the Section on Laryngology and Otology, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

BY G. V. WOOLEN, M.D.

INDIANAPOLIS, IND.

Gentlemen of the Section:—It is especially pleasing to me to meet so many of you again, and in this fair city of the South already noted for its activity in promoting the general welfare of mankind.

I again wish to express to you my sincere thanks for the high honor conferred in selecting me to preside over this part of our work so dear to us all. Whatever may be our ideas relative to specialties and the organization of special societies, it must be conceded that the unity of the profession must be preserved, and that much of our best work should be performed in connection with the meetings of this ASSOCIATION. It is, therefore, fitting that we meet annually with the profession for special as well as general work, and the consideration of matters pertaining to the general welfare of the fraternity.

It will be a sad day for specialists when this is neglected. We can not afford to ignore these claims and I am persuaded that it is the purpose of you who have helped to further the interests of this section from its beginning to have no thought of forgetting this AMERICAN MEDICAL ASSOCIATION, now old and honored in its usefulness.

In view of the length of our program, and the desire of your Chairman that a full discussion of its merits may be secured, without which our meeting will be robbed of much of its interest and profit, it is not his intention to furnish an extended address. In this respect, and in the preparation of the program it is desired to depart from former customs somewhat, hoping thereby to increase the interest of our meeting.

By collecting papers on allied subjects for individual sessions and following them with a speaker specially chosen to open the discussion it is hoped the interest will be direct, and much useful information secured, and thus justify the departure. Indeed it has been a question with me if this department might not be extended by the selection of a single individual to furnish a paper for each session of our future meetings and of one or more to open the discussion and so confine attention, thereby securing more exhaustive work than can be had by our present methods.

Our specialty is young, but its field is broad, vastly more so than the uninitiated can know, and our very best endeavors should be given to bring it up to the high plain of its importance, and not the least of these efforts should be put forth annually in this section here in close contact with our fellows of the other departments.

ORIGINAL ARTICLES.

SUBCONJUNCTIVAL INJECTIONS.

Read in the Section on Ophthalmology at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

BY EDWARD J. BERNSTEIN, M.D.

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Like all other remedial agents, subconjunctival injections must run the gauntlet of ill-considered judgments, both favorable and adverse, until its place shall have been firmly assigned.

Few men, like Abadie, Darier, Deutschmann, Gepner, Schmidt-Rimpler, Pflueger and Zossenheim have yet had sufficient personal experience to entitle them to give conclusive verdicts. In the main, these men assert, we have in this method a means at our hand, swift, sure and intense, which under proper precautions and indications should stand us in good stead, whether employed alone or in conjunction with general treatment.

That it is a panacea or infallible, not even an enthusiast will contend. Much adverse criticism comes from those who declare that we have no precise indication for its employment. Certainly we must, *in part*, admit this contention, but should one expect a hard and fast demarcation in a method so novel?

Even Darier, who has been working in this line since 1888, admits that he must still often work in the dark. But are we uniformly successful with opium, quinin, or the bromids? Shall we give up the use of the Eustachian catheter because of discouragement and occasional failure?

Though Rothmund, in 1866, and Segondi, in 1871, were the pioneers in the use of subconjunctival injections, it is to the persistence and zeal of M. A. Darier we owe the present status of the question.

Though rather unfavorably impressed with the method when I observed it in the fall of 1891 under Darier, that opinion has been greatly modified during the past sixteen months. My task shall be to supplement the work of Valude (*Annales D'Occulistique*, August, 1893) and to record my own experience.

Upon technique I shall only touch, referring for more complete data to the original articles and the many translations, but the following points are worthy of consideration:

1. Observance of every practical aseptic precaution —sterile ground, solution and instruments.

2. Thorough anesthesia of conjunctiva with 4 per cent. (sterile) cocain solution.

3. Use of cyanid of mercury instead of sublimate. Cyanid hydrargyri is compatible with cocain muriate. Adding 1 per cent. of cocain increases anesthetic effect. Cyanid is less irritating than sublimate, and is taken up as such by the tissues instead of being converted into the slowly soluble albuminate,

4. The injection is to be made *subconjunctivally*, and as far as possible at a tangent with the globe. and *not* under Tenon's capsule.

We can avoid the larger vessels by simply rubbing the lid over the eye once or twice, when they become visible, and one can readily choose a clear spot. We are not so fortunate with the fine nerve twigs, and should we puncture one of these pain will be quite severe for twenty-four hours.

Muttermilch (*Annales D'Occulistique*, September, 1894) asks: "Why resort to injections when we know that fluids reach the interior of the eye by simple instillation into the sac?" Even if sublimate so given were absorbed, which he questions, basing conclusions on Tichomoroff, the dose would be so infinitesimal that its effect would be *nil*. "Say you inject one-twentieth mg., the beginning dose, two-thirds of the fluid is lost (?) in the conjunctival sac, leaving but one-third, or one-sixtieth mg. (0.000017), to enter the eye. Now reckon the volume of the eye at 7 c.m., you then obtain a dilution of 1 to 400,000 which can hardly be called an antiseptic solution." Furthermore, he believes whatever good results is from suggestion.

To these we may reply that the action of drugs injected is intensified, and it is a more exact method of dosage. Pflueger converted the crystallin lens into an emerald mass by so injecting solution of fluorescin. Cocain thus used produces a rapid and thorough anesthesia of the iris, which simple instillation does very unsatisfactorily, if at all. But it is objected that this does not hold true for sublimate, which is converted into the slowly soluble albuminate in the body. Does this latter not apply equally as well to its hypodermic use, and who can gainsay its superiority in accuracy of dosage, rapidity and intensity of action over the administration per ora? Yet here we use the cyanid, which is not, or but feebly so, transformed. Admit even that all the mercury is so changed, it will none the less be absorbed. Bocchi demonstrated microscopically the presence of mercury in the tissues after injections under the conjunctiva.

The assertion that but one-third of the fluid injected enters the eye is a flight of the imagination and not founded on fact. Let us even admit this to be true, yet are his calculations and conclusions erroneous.

Say we inject hypodermically 0.01, the usual dose, of $HgCl_2$ for a person of 60 kgm. Remember much of the hydrargyrum is carried off by the excretory organs; the liver takes up and retains a larger proportion; then come the other glands, especially the salivary glands; next, the skin, and finally the other organs and tissues. Now, how much of this 0.01 goes to the eye? And have we not all seen specific lesions actually melt away under its influence? Does it not look on the face of it that a larger proportion of hydrargyrum enters the eye by this means than by systemic medication? And is it not also likely that hydrargyrum acts in a much smaller dose than we generally credit? You can not estimate the quantity, as you see, by saying, "If the eye weighs 6 gm. and the body 60 kgm. then one-ten-thousandth goes to the eye."

I propose during the summer to make the actual experiment, using some such method as suggested by Dr. Rudolph Winternitz, and promise to report later.

Are we at all sure that drugs injected subconjunctivally enter the eye? Of this there can be no doubt. "Let us inject a solution of K_2FeCy_3 subconjunctivally, and after a short time enucleate the eye and fix the eye in an alcoholic solution of ferric chlorid (Fe_2Cl_6). On making sections we can show that the first solution entered by way of the lymph channels, for these show colorless on a blue background. The connective tissue retains the K_2FeCy_3 with great tenacity" (Schwalbe, *Anat. Des Auges*). Ovis and Pflueger have demonstrated China ink—in the lymph channels —which had been previously injected under the conjunctiva.

As several writers contend that the main action of subconjunctival injection is limited to the anterior portion of the eye, and therefore preferred to inject, if at all, under the capsule of Tenon. Carl Mellinger and Domenico Bossalino determined to find out just how far fluids so injected would enter the eye and its neighborhood; they made a series of injections with sterilized mixtures of China ink. These were well borne and produced no inflammatory reaction. The staining particles were found in the lymph channels, the leucocytes could not be demonstrated as charged with the material to any considerable extent. They showed that the particles did follow the large lymph channels of the whole globe and optic nerve, and that not only was the eye and nerve surrounded by such, but the supra-choroidal spaces (by smaller communicating channels) and the intervaginal spaces (Zwischenscheidenraum) as well.

Sublimate thus injected entered the eye as albuminate. Neither Bach nor Hess could discover any sublimate in the interior of the eyes they experimented on, though Bocchi, Brugnitelli, Gallemaerts and Jolly always recovered small quantities by electrolysis.

Pflueger employs solution trichlorid of iodin (1 to 1,000). His results in general are not so good as those obtained by the use of hydrargyrum. Still in retinal detachment, macular retino-choroiditis, he reports good results where others meet failure with hydrargyrum.

Is it not likely an indication to employ iodin trichlorid in some of these cases and hydrargyrum in others? Or are they not at least worthy of trial? Marti following in the line of Mellinger found equally good results from the use of weaker solutions of hydrargyrum. He declares that subconjunctival injections act not through any germicidal influence, but by action on the lymphatic circulation (stimulating its rapidity) thereby causing resorption and elimination of pathologic products, thus hastening healing. That his results with salt were equally as efficacious as with hydrargyrum, with the advantage of greatly diminishing pain, and furthermore avoiding the adhesion of the conjunctiva to sclera at site of puncture

To this Darier replies that adhesions only occur when puncture is made too near the limbus or too deep under the conjunctiva. Pain is a variable quantity even in the same individual. Sometimes in one patient an injection will be perfectly painless, while the next time it will be excessive. He had one patient who went through a whole course of hydrargyrum injection without pain, and who complained bitterly when he once injected distilled water. Darier had tried salt solution, iodin trichlorid, soda salicylate and various other drugs, but is convinced that hydrargyrum is most reliable in his hands.

As soon as Mellinger, Pflueger and the rest prove their assertion by an array of sufficiently conclusive observations, Darier says he will be among the first to admit their utility, and will follow their lead. At any rate, these men obtain good results from this procedure, and this is a gain in the right direction. We must not forget that it is not intended to do away with general treatment; all that is claimed for it, is that it intensifies the action of hydrargyrum and hastens cure.

Mellinger declares the action of subconjunctival injections to be alterative; possibly hastening the flow in the lymph channels, thus carrying infectious particles away more quickly. Gepner is satisfied that it is the hydrargyrum which is beneficial, because in two instances he used salt solution with no result; improvement began immediately after substitution of hydrargyrum.

Gutman condemns the method. He says it is not only painful and gives no good results, but often works positive injury. He characterizes Darier's work as insufficient and inaccurate. No one who has observed Darier will question his accuracy or sincerity. As to insufficiency, this is in a measure true, as Darier admits, but consider that under his hands, the work has gone on steadily since 1888, that Deutschmann has made some 2,000 injections, that between Gepner, Peunow, Picunoff, Bergmeister, Schmidt-Rimpler and Grossman some three hundred cases and more are reported, and we must admit that it is not wholly an untried experiment.

Yet, Gutman, from the standpoint of experience gained in twelve cases, would sweep away this whole structure. Let us examine his own report, and we see that his results are better than his conclusion, and that they bear out the utility of this method. He obtained good results with iodin trichlorid; had he continued this remedy doubtless his results would have been better; at any rate we will await the results of his experiments with NaCl. solution and trust they will be more extensive, and that he will come to modify his former opinions.

Gallenga found that corneal ulcerations artificially produced in rabbits' eyes were quickly healed by subconjunctival injection. This, Muttermilch declares is without significance, as such heal quickly when nothing is done, and were it really due to hydrargyrum, he might have obtained equally good results from simple instillation.

According to Muttermilch, "Should one use this treatment for sympathetic ophthalmia, one would make the double mistake of using an innocuous means against a microörganism which does not exist (proceeding from the standpoint of Deutschmann), for he says the microbian theory is not alone not proven, but every pathologic and physiologic experiment, as well clinical experience, is against such a theory. In reference to the two cases myopic choroido-retinitis reported by Gepner as benefited, he is of the opinion that the rest which the patients obtained in the hospital would have done the same. As to prevention of post-operative purulent infection, he has the greatest doubts, for we know even without this new treatment few wounds now suppurate, and that it is rare for iritis to be transformed into irido-choroiditis." In these latter he is in a measure correct, but when purulent infection does start often sad havoc is caused before its progress is checked, and it is right to be on the safe side. We know Jaeger and Arlt had a percentage reaching 95 and 97 in their cataract extractions in pre-aseptic days. Does this release us to-day from taking the most stringent precautions? As a matter of fact, his whole criticism is based on an experience gained in three cases: One ulcus serpens cum hypopyon, one kerato-iritis traumatica and one of ophthalmia sympathetica. In his ulcus serpens case he ruptured the cornea, most likely because he did not observe the rule not to inject too near the limbus, and in the other two he desisted on account of pain. He further attributes many of the reported cures to suggestion. The pain induced and a glance at the list of cases reported cured by this treatment is sufficient to negative any such theory. A criticism based on so wide (*sic*) an experience can hardly be upheld in the face of so much positive clinical proof to the contrary. My own personal experience was gained from seven cases.

Case 1.—Hypopyon keratitis; J. S., 20; recent injury, his anterior chamber one-fifth full of pus; marked photophobia; much ciliary pain; lachrymal ducts normal. Typical case. Patient has been under atropin, pressure bandage and iodoform treatment for sixteen days; is worse and in more pain. Under these circumstances injected one portion of a Pravaz syringe full cyanid of mercury (1-3000); continued the pressure bandage. Next day hypopyon had decreased and he had the first night's sleep since his present illness began. Four days later repeated the injection and four days thereafter the third, when ulcer was covered with epithelium and case went on to recovery under simple bandage.

Case 2.—April 2, 1894, M. L., age 26. Keratitis ulcerativa cum hypopyon. Typical case, in a very much reduced individual. Resulted from having baby stick finger-nail into cornea. Case progressing very unfavorably for eighteen days. Hypopyon beginning; whole cornea cloudy; injection of cyanid on April 20, followed by three more at intervals of five days. Recovery began from the first injection. Cloudiness clearing up from day to day. Cure with small peripheral macula of cornea.

Case 3.—J. W. Had had several attacks of iritis in each eye; no luetic history; borth irides bound down by many adhesions, the right one almost completely. Could allay pain and inflammation, but could not break up synechia, so performed iridectomy on right eye. Was told to return immediately if any symptoms of trouble in left eye. In six months some exposure brought on another attack of iritis. In the face of his old synechia I feared a total occlusion and offered the alternative of iridectomy or subconjunctival injections. The latter was

accepted, and as result of four injections the old adhesions yielded to the atropia and his pupil is now round.

Case 4.—Keratitis punctata. W. T., aged 30. Typical case of acquired luetic keratitis punctata. Had been under care some three weeks and was progressing very slowly. Suggested subconjunctival injections, which were accepted. After five injections at intervals of five or six days, patient could return to work. In this case I can only claim that the injections hastened the progress, as it was beginning to show signs of recovery when I began.

Cases 5 and 6 were cases of optic nerve trouble. One, H. J., positive luetic history. Came when vision of right eye was reduced to light perceptions, of left eye to counting fingers at 6 m. Field of vision narrowed and contracted; color sense also very defective for blues and greens. Typical atrophic discs in both eyes, showing lamina cribrosa. After routine treatment had been instituted for more than six weeks, subconjunctival injections to the number of twelve were administered, but, except for a light transitory improvement, to no avail.

Case 6.—Typical tobacco amblyopia, in which cure was hastened by seven injections and the length of treatment reduced to six weeks.

Case 7.—Is a case of old choroiditis disseminata in left eye, with total loss of vision, and detachment of retina in right. This case is being treated with iodin trichlorid and result will only be known in the future.

Let us now turn to special indications for the employment of subconjunctival medications and see when and by whom they are endorsed.

In keratitis parenchymatosa general treatment is the first and most constant indication. Above all hypodermic injection of sublimate, not neglecting atropin, warm compresses, etc. Special indications calling for subconjunctival injections are keratitis benigna, keratitis circumscripta, keratitis atonica or at least with a very moderate reaction; here the results are absolutely marvelous; with each injection one often sees the gradual recession of the area of infiltration. When limited to the center of the cornea massage with lanolin ointment of mercury produces active resorption of old maculæ. (This I have tried in a number of cases with most excellent results.) At the period of decline, when the bulbar conjunctiva has regained its normal state, these injections will often clear up in a few days what would otherwise have taken months. In the acute, violent pannus of keratitis parenchymatosa all local irritating treatment is absolutely contraindicated, and this is also true wherever there is stasis of the ocular circulation.

Deutschmann and Zossenheim (Beitraege zur Augenh. XV, 1894) agree "that we can often shorten the treatment to four weeks, while it usually takes twice or thrice as long."

Gepner would expect good results, though must acknowledge one of nine cases was cured, the other eight merely benefited.

Peunow treated twenty-three cases with good results, best however in those of specific origin.

Picounoff treated between twenty and thirty; commends treatment under above conditions.

Veasey treated two cases. Cured one, stopped treatment of the other on account of pain.

Abadie endorses all Darier says in this regard.

Chibret, Mellinger and Gosetti have used the method and approved of it.

Motais was "impressed by the rapidity of recovery."

Gerasimos Materangos treated a number of cases of traumatic and infectious keratitis in conjunction with general treatment, best results.

Schmidt-Rimpler treated nine cases, and does not recommend.

Haab, ten cases, no result.

Keratitis ulcerativa cum hypopyon.—Its utility is here questioned because it has not been applied with sufficient discernment.

In mild cases, it will produce cures quicker than by the classic treatment. In those of average intensity the galvano-cautery to the edges of the ulcer is the first indication together with antiseptic dressing. In grave cases where the globe or cornea is threatened Saemisch incision or galvano-cautery, or both are necessary. Cure is hastened when followed by subconjunctival injections (five to ten divisions of the syringe) made as far as possible from the cornea and above all not under Tenon's capsule. In great hyperemia the artificial leech applied to temple helps.

Failure to observe these points produced rupture of cornea in Muttermilch's case. Any such formula as "ulcer of cornea, subconjunctival injections" will result in numerous failures, while observance of the above indications will hasten cure.

Gepner "employs it most frequently in ulcerative forms of keratitis and with best results."

Gagarin—"Good and rapid results up to the clearing of hypopyon; after this not much further improvement is noted."

Peunow—"Considerable help, but does not neglect routine treatment."

Veasey—"As good as other methods."

Abadie—"Highly extols."

Mellinger had brilliant results.

Bocchi—"First injection brought process to a halt."

Gossetti—"Very efficacious from the first injection."

Grossman and Rogman and myself had excellent results.

Chibret—"Results doubtful."

Masselon—"Altogether negative."

Schmidt-Rimpler—In thirteen cases of ulcerative keratitis hypopyon. Good results in three. Questionable in eight. Two of simple ulcerative keratitis gave negative results. He thinks very little of it in this latter and hypopyon keratitis.

Deutschmann prefers galvano-cautery, which in his hands works surer and quicker.

In keratitis lymphatica, Darier, Doufer and Segondi coincide that the yellow ointment fills every indication except in grave cases, when the new method gives good results.

Coppez and Gallemaerts give preference in vascular keratitis to subconjunctival injection of potassium iodid solution.

In iritis the indications and the contraindications are very subtle. While in many the results are beneficial, in others it is not only useless, but positively harmful. Whenever iritis is lighted up with violence, and is accompanied by brisk reaction (deep pericorneal hyperemia, chemosis, photophobia, etc.) an energetic antiphlogistic treatment is the first indication in connection with general treatment of the proper character. Only after the violence has abated is subconjunctival injection indicated. Failure to observe this might provoke an aggravation of symptoms in an eye already inflamed, and is no doubt, the cause of much of the reproach heaped upon this method and the consequent ill success, whereas those who have instituted treatment in relatively benign cases, either at their beginning, their relapse or their decline have according to Darier obtained conclusive evidence of its efficacy, but in benign cases, the older methods are less annoying and often equally as satisfactory.

I coincide with Gepner, who finds its main indica-

tion in assisting to break up old iritic synechiæ, or in the very beginning of the malady, for as Zossenheim says it cures so quickly that complications have no chance to manifest themselves. It may be used with advantage according to both these men in occlusion of the pupil and where we find hypopyon in the anterior chamber. Peunow treated twenty-eight cases with good results. Picounoff also had the same uniformly good results in a large number of cases. Veasey seven cases, prompt and effectual results in all, as also in cases of chorio-retinitis.

Schmidt-Rimpler nine cases. Cured two cases of plastic iritis, other results divided as follows: One cured after thirteen injections; four relatively good results; two slightly benefited; he recommends further use of this method in iritis and irido-choroiditis.

Grossman, Alt and Mellinger also commend its use.

Bergmeister two cases. Both cured after the fourth injection.

Bocchi and Masselon do not recommend it in iritis.

Irido-choroiditis.—What applies to iritis applies with greater force in this. In a disease so difficult to treat and holding out such poor promise, we often proceed as though groping in the dark, for at times we see one of those eyes apparently quiescent, react with an extreme violence to the slightest local irritation. These are the cases in which we are often led to prematurely perform iridectomy.

With injections one is often surprised to observe not only amelioration, but at times cure, where one would not expect such. In certain grave cases, we are obliged to keep the patient under continuous treatment, often alternating between general and local, so as to give the patient a relative rest.

Grossman treated two cases with good results. Alt also reported success. Pflueger treated his cases with iodin trichlorid and reports: one case of serous iritis, result beneficial; in another no effect; in a third stopped on account of pain and increasing intra-ocular tension.

Matarangas—Good results in conjunction with general treatment.

Deutschmann—Iritis specifica, as well as non-specifica, this method was at its best. He uses no atropin. Posterior synechia disappeared, and in four to eight days the pupil was quite round, dilating and contracting freely and the eye quiet. Saw no recidives; completed the treatment with mercury internally.

Choroiditis and retinitis.—When structural lesions have occurred, it is impossible to speak of cure in the sense of complete restoration. Much can be done for those who seek our aid early, to avoid such destruction by active and prompt methods, among the foremost of which stand subconjunctival injections.

Often an appreciable effect is noted from the first or second injection, and again not until a great number have been made. In macular choroiditis before central vision has been irremediably destroyed, we can restore if not normal vision, at least bring a considerable amelioration, and in so short a time there can be no doubt of the relation of cause and effect. Darier claims favorable result in at least 25 per cent. of his cases, and in 10 per cent. a result which "I can call surprising."

Abadie claims its efficacy in all degrees of chronic chorio-retinitis. He condemns the use of potassium iodid alone or with mercury as manifestly injurious. Injections of pilocarpin had no effect except when due to myopia; certainly not in infectious forms. In obstinate cases he uses subcutaneous injections in addition.

Venneman—Results excellent.

Grandclermont—Best effect in serious or desperate affections of middle (vascular) coats of the eye. Above all in irido-choroiditis.

Gepner—Improvement in many cases of chronic choroiditis. Decided in two cases of myopic choroiditis.

Peunow—Thirty-one cases choroiditis cured by these means.

Deutschmann—Especially good results in specific chorio-retinitis. In non-specific choroiditis best results from potassium iodid kept up for months.

Schmidt-Rimpler—One good result in choroiditis; two doubtful in chorio-retinitis; thinks this is one of the conditions in which it is worthy of further trial.

Bergmeister—Not specially praiseworthy but recommends further trial.

Alt—Good results in choroiditis exudativa and centralis.

Bocchi—No specially good results; in this he is sustained by Masselon, Lacquer, Dianoux.

Bull—Positive effect in allaying severity of symptoms, and shortening the duration of acute irido-choroiditis non-specifica.

Seggel reports a cure in irido-cyclitis.

Optic Nerve.—Darier says in all infectious inflammations of the nerve, results are encouraging often after classic treatment proves unavailing. In retro-bulbar neuritis often excellent results, though in hereditary form we secure neither better nor worse results than by other means. Does not include tobacco and alcoholic amblyopia which tend to recovery *sublata causa.* Where actual atrophy of nerve fibers has set in it is useless to expect results. In retro-bulbar neuritis of rheumatic (?) origin, better results than by salicylates or mercury.

In compression neurites, obtained very rapid cure. In specific neuritis, and in one secondary to chorio-retinitis greater amelioration than by old method.

We may expect good results in recent infectious inflammations.

"No results to be expected in gray atrophy of tabes, in white atrophy following old inflammatory processes occasionally a slow increase of vision is manifest, but generally only transient."

Grossman, De Wecker, Lindsay Johnson and Matarangas corroborate these opinions. Deutschmann's results negative in every case. In commenting on this in his journal, Hirschberg reports a good result in chronic optic neuritis, also in one of recent origin.

In sympathetic ophthalmia, Darier found subconjunctival injections available in a number of cases characterized by uveitis.

Abadie says: If the injury is not so serious as to preclude all possibility of recovery, the surface of the wound should be touched with the galvano-cautery, and hydrargyrum bichlorid injected under the conjunctiva. It is often thus possible to arrest sympathetic ophthalmia already declared in the other eye, but if the traumatism is such that there is no hope of saving, or if disorder continues in spite of all these means, we should enucleate the offending eye. The other one will be benefited by the injections. Personally, I should hesitate to temporize with an injured eye which is likely to cause sympathetic ophthalmia. We all know how many such eyes may remain quiescent for as long as fifteen or twenty years, to suddenly light up inflammation in the other eye.

Gosetti reports remarkable success in a severe and recurrent case.

Deutschmann also reports good results in a number of cases.

Picounoff especially recommends it, here, where we can usually avoid enucleation.

In scleritis De Schweinitz, Bull, Veasey and others report some good results among a number of negative ones.

Many, Abadie and Coppez among the number, declare that they have thus avoided panophthalmitis in many cases of cataract and iridectomy operations, and indeed have checked the disease when it had actually begun. Rogman corroborates this latter statement.

Gepner says he resorts to subconjunctival injections in all cases of serious injury where there is still hope of saving the globe, for two reasons: 1, because we can not foretell where we have wound infection before we see our patient; 2, because in every deep injury we can not foretell whether sympathetic ophthalmia will result. Germicidal agents in the lymph channels lessen that danger. Seggel reports cure of suppuration of vitreous after cataract extraction, one case of threatened destruction of the whole cornea and vitreous from infected wound with prolapsed iris, and also cure of a case of orbital phlegmon.

Deutschmann says: "As a preventive of post-operative infection it is of a special utility. Cases that usually resulted in loss of the eye were by this means saved useful vision." In this he is upheld by Gepner and others. He further says: "We can not compare results of experiments made on animals to clinical results in man. In animals large deposits are at once introduced into the eye, which condition bears no relation to that in post-operative infection."

DISCUSSION.

DR. G. E. DE SCHWEINITZ, Philadelphia—I have used the subconjunctival injections since 1892 and also advised my chief of clinic, Dr. C. A. Veasey, whose results have been quoted, to employ them. My experience is that exactly the same results are obtained whether the bichlorid of mercury or the physiologic salt solution is used, each being equally efficient in suitable cases. I have secured good results in iritis, no matter what its type, provided there is no high inflammatory action. Good results were also obtained in episcleritis and some types of keratitis. I have failed, however, to secure good results in corneal ulcers and in diseases of the deeper coats, *e.g.*, choroiditis. I would call attention to the promptness with which these injections, either salt or mercuric, relieve pain and advance resolution in certain cases of inflammatory disease of the iris and episcleritis, but would also suggest that a relapse is more likely to occur than when ordinary constitutional measures are thoroughly employed. I believe that subconjunctival injections deserve a permanent place in ophthalmic therapeutics, but not to the exclusion of constitutional measures.

Case 1.—A. M., a male Italian, about 40 years of age, presented himself at the eye dispensary of the Jefferson hospital for treatment of sore eyes. Upon examination he was found to have a double syphilitic iritis, plastic in character, the initial lesion having been present four months. There were present the usual symptoms of marked pericorneal injection, intense pain, photophobia, lachrymation and a contracted pupil with posterior synechiæ, these symptoms having been present, according to the patient's statement, for four days. In the right eye the iris is attached to the lens capsule by its entire pupillary border, except a small portion in the upper and outer quadrant, this being the only part that would dilate with atropin. The media were hazy, and there was an indistinct view of the fundus which showed an oval disc, with rather large veins, filled with dark blood, but there were no gross lesions. In the left eye there was also almost complete annular attachment of the iris, there being a small free portion on the temporal side, while the ocular fundus presented practically the same appearance as the other eye. His vision was 10-200 in each eye. Atropin was instilled for twenty-four hours without any improvement in the pain, and with very limited dilatation in the pupils. He was then given a subconjunctival injection of mercuric chlorid (5 minims of a 1 to 2,000 solution) in one eye, and a subconjunctival injection of sodium chlorid (2 to 10 of a 1 per cent. solution) in the other eye, and returned on the following day with the pupils dilated ad maximum, the pain entirely gone, and said that he had spent the night free from pain, the first for about a week. There was absolutely no difference to be detected between the effect on the two eyes. This treatment was continued, he being given an injection of mercuric chlorid in one eye and sodium chlorid in the other, at intervals of two or three days, until he had received five injections of each, no other medication being employed except the solution of atropin. At the expiration of this time the pupils were completely dilated, there had been no pain since the first injection, and it was impossible to say that there had been the slightest difference in the results of the two solutions. His vision was 20-30 in each eye, there being some pigment on the capsule of the lens where the iris had been attached.

Case 2.—C. B., a male, aged 35 years, came to the eye dispensary of the Jefferson Medical College Hospital complaining of sore eyes that had been present for two days. Upon examination he was found to have a syphilitic plastic iritis in the right eye, the initial lesion having been present about six months. There was a small synechia up and out, the vision was 20-100 and there were the usual symptoms of the disease present. In the other eye there was a slight conjunctivitis, the vision being 20-20. He was suffering from severe pain and was given an injection beneath the conjunctiva of the solution of sodium chlorid; atropin was instilled into the eye, and he returned on the following day entirely free from pain, the pupil dilated, the peri-corneal injection much less and the photophobia less severe. He was given similar injections on alternate days until he had had four, no other treatment being employed beyond the instillation of the atropin solution, when the inflammatory condition of the eye had entirely disappeared. No difference could be observed between the promptness with which the disease yielded to the injections of sodium chlorid and the promptness with which other cases had yielded to the injections of mercuric chlorid. The vision in this case returned to the normal.

Case 3.—H. F., male, aged 31 years, consulted me in February of this year for a rheumatic iritis. There was no specific history, and he had had several attacks of the same character before, each time being treated by a competent ophthalmic surgeon who had pronounced it rheumatic in character and relieving it each time by the use of the salicylates, in addition to other treatment. The pain was intense, and desiring to see what effect an injection of salt solution would have, one was made at once, and other treatment, excepting the instillation of atropin, withheld. On the next day he returned with a complete cessation of pain, except when exposed to bright light, the pupil entirely dilated and a marked reduction in the inflammatory condition. He was given five other injections, after which the iritis was practically well, when he was placed on the anti-rheumatic treatment. Other cases of iritis, syphilitic or rheumatic, treated by myself with injections beneath the conjunctiva of mercuric chlorid, have not shown any advantage over the injections of the solution of sodium chlorid. Indeed, it is my experience that the latter causes less pain, and relieves the pain of the iritis just as speedily, if not more so, than the injections of the mercuric chlorid.

DR. G. C. SAVAGE, Nashville—I have used only the bichlorid, but found it too painful. When opportunity offers I shall use the cyanid of mercury. I wish to condemn the practice of not using atropin in iritis, although subconjunctival injections of cyanid of mercury may be capable of accomplishing much. Atropin should never be omitted in the treatment of iritis, whatever else may be done. I want to go on record as believing that it would be a grave error to neglect bringing the iris under the influence of atropin, whoever may recommend to the contrary.

DR. D. S. REYNOLDS, Louisville—I am not persuaded that any local method of treating iritis, except the persistent use of an efficient mydriatic, has ever accomplished any desirable result. The subconjunctival injection of a solution of chlorid of sodium in cases of synechia following iritis from all causes

is undoubtedly valuable, but I should certainly avoid the use of any subconjunctival injections during the active stages of any form of iritis.

Dr. A. W. Stirling, Atlanta—I watched the use of this method in a fair number of cases in London and Paris and have tried it myself, but gave it up because it was so painful. It will not take precedence over the older methods.

Dr. A. R. Baker, Cleveland—Having used the strong solutions of bichlorid of mercury and found the injections painful, I estimated the amount of mercury which would reach the eye from a subcutaneous injection as generally used, and determined that a much weaker solution would probably prove efficient, I tried a 1 to 10,000 solution with excellent results in a large number of cases, notably interstitial keratitis and central choroiditis. The injections were never painful and the results appeared as good as from the stronger solution. In private practice it has been found necessary to combine its use with the accepted methods of treatment, but with more rapid recovery than when its use is omitted.

Dr. Dunbar Roy, Atlanta—I use the method largely in my clinic, where the patients consist largely of the colored race, who have a great deal of corneal trouble. In ulcers of the cornea I have had good results, but no better than when I use hot fomentations and iodoform. In post-suppurative trouble and panophthalmitis and in cases of suppurative iritis I have used it with success. I have used 1 to 1,000 bichlorid with an ordinary hypodermic needle, sterilizing both the instrument and the field before the operation. In iritis I have not seen adhesions break up and have had no results in choroiditis, but my experience leads me to say that in ulcerative and suppurative forms of conjunctivitis or keratitis the results are as good as those obtained by other methods.

Dr. E. J. Bernstein—I have no experience as yet with relapses, but one must not forget that neither atropin nor general treatment are to be neglected in iritis. As to pain, my patients had none, or very little, as the result of subconjunctival injections. I am now treating a case of detachment of the retina by this means without much hope of cure, but because no other treatment has availed. I believe no one should follow Abadie in not using atropin in iritis. I should hesitate too implicitly to follow his lead. In phlyctenular keratitis I should not think of using this method, as I believe most men agree that the yellow ointment is all that is needed.

EXTRA-DURAL ABSCESS FROM MASTOID EMPYEMIA.

Read in the Section on Laryngology and Otology at the Forty-seventh Annual Meeting of the American Medical Association held at Atlanta, Ga., May 5-8, 1896.

BY B. ALEXANDER RANDALL, M.D.

PHILADELPHIA, PA.

When the presence of a "mastoid abscess," declared by the occurrence of a fluctuating collection of pus on the surface of the skull behind the ear, only caused the surgeon to incise and evacuate the abscess, we heard little of extra-dural or cerebral abscess except as a curiosity of the postmortem room. Even when the farther step of opening the mastoid became more common, it was so often merely in the interest of better evacuation and drainage that exploration for the remoter extensions of the lesions was rare. It is only since we have more generally adopted the idea urged by all experienced operators, that every possible trace of the pathologic condition shall be extirpated at the operation in the effort to secure immediate cure, that the relative frequency of extra-dural abscess has been recognized. The earlier operators looked upon the middle cerebral fossa and the sigmoid sulcus as regions dangerous to approach, and perhaps held their hands as they followed some purulent track lest it should lead them into these dreaded cavities. The impetuous entered them oftener than they meant, and the careless oftener than they knew, while the careful and conscientious surgeon was gradually learning the innocuous and beneficent effect of hunting down the disease even into these and deeper regions. With the abandonment of the trephine and drill in favor of the gouge and spoon, much of this fear has died a natural death. There is less chance of unintentionally and blindly penetrating the inner table of the mastoid and wounding or infecting the important structures within. Mastoid anatomy is being better learned and the rule has grown more common to operate in each case as though the relations were the most disadvantageous possible, and to assume no safety that has not been demonstrated. And with this knowledge that the middle lobe of the brain may extend down as low as the upper margin of the meatus and the lateral sinus be separated by hardly a film of bone from the back wall of the canal or the mastoid surface at the usual point of attack, there has grown a proper confidence in the wisdom of opening the intracranial cavity in appropriate cases. It should always count as a bungling step when accidentally these cavities are opened, or an officious one when needless; but the futility of half measures grows more evident with experience. One who formerly looked askance at the radical procedures and views of Schwartze and others who chisel open the mastoid in scores of cases yearly, finds his tendency to follow this lead to be limited principally by his lack of a like material. And since the grippe epidemics few of large aural practice but have had growing opportunities to learn the need of such measures.

We can no longer look upon "mastoid trephining" (as we may still call the operation whether done with chisel, burr or spoon) as permissible only as a life-saving step; nor can we rest content to leave to long after-treatment the completion of the cure which might have been more safely as well as more quickly secured by more heroic thoroughness. It is to be hoped that American aural surgeons will continue truly conservative in their choice of cases, methods and efforts after thoroughness, eliminating all cases that might be cured by less radical procedures and sacrificing to brilliancy of immediate result no function that patience might have saved; but it is also to be hoped that they will give little basis to the charge sometimes made by the surgeon, that they are too timid in their work and shrink from doing their full duty when half measures are insufficient.

The past decade has seen the publication of hundreds of cases in which there has been extension of caries from the tympanic inflammation to the dural surface of the temporal bone, with pachy-menigitis and outpouring of pus between the bone and dura. In itself it constitutes no great menace to life, and the prognosis after drainage is generally excellent. So little may be the head symptoms caused by it that its presence is a total surprise to the operator; and one marvels that lesions so extensive may be wholly undeclared by the usual signs.

Surprisingly innocuous as the extra-dural abscess has generally proved if drained outward by nature or art, the story is wholly different in no small group of cases. Most of the thrombotic lesions of lateral, petrosal or cavernous sinus have been secondary to extra-dural abscess. Many cerebral and cerebellar

abscesses are due to the previous existence of pus outside of the dura. Raised here above the normal level, the dura may present no visible farther disturbance in the form of injection, etc.; yet the overlying brain is apt to show a discolored depression with pial injection and commencing softening. Again there is ulceration of the dura with rupture of the pus either into the arachnoid space or through the agglutinated tissue into the brain substance. In other cases the exact path of the process can not be traced; yet the extra-dural abscess must be held responsible for the serious or fatal occurrence.

It is no new matter to point out the dangers of acute or chronic aural suppuration in these directions, although the importance can never be overstated in any truthful setting forth of the matter. It is not so generally known how rapid the process may be. A good illustration was met last year when a boy came to me with mastoid abscess, supervening upon a light blow on his chronically suppurating right ear. Nausea and general malaise immediately followed and persisted in less degree on the fifth day, when I first saw him. No changes were visible in the eye-grounds to suggest intra-cranial involvement; but fever was marked and operation promptly needed. This could not be carried out until the second day following, when the very hard mastoid was very freely chiseled open, all carious bone in the antrum and adjacent cells curetted away and smooth, firm walls left toward the middle and posterior cerebral cavities. His fever fell, to rise again almost immediately; pleurisy and then pulmonary inflammation quickly declared themselves, and he died on the sixth day after operation. Autopsy showed a septic pleurisy and pulmonary abscesses; while in the cranium a cerebellar abscess as large as a plum ruptured on removing the brain, at the point where it was adherent to the sub-dural collection which extended backward from the tegmen down upon the posterior aspect of the petrous. Section of the bone showed no microscopic connection of the intra-cranial collections with the the tympanic spaces—the intervening bone being firm and intact, if not healthy. The nearly total destruction of the ossicles marked the otorrhea as of long standing; but all the other lesions had probably developed within the thirteen days after the aggravating blow. The parietal lobe, where it rested on the subdural collection was injected, depressed and softened and would doubtless in a few days have been the site of a cerebral abscess.

Numerous other instances have come to my knowledge, sometimes only on the postmortem table, rarely, I am glad to say, in my own patients. Of some thirty whose mastoids I have opened in the past year, nearly one-third have had caries which compelled me to uncover the dura, and in a number of them the granulations upon its surface, if not the gush of pus as it was exposed, revealed the fact that it had been separated from the bone by a layer of pus. In several cases what seemed at the time a complete operation left bone of too little vitality behind and a later operation had to be carried still farther under the dura; and in one there was death, probably from a cerebellar abscess which could not be found.

Doubtless other aural surgeons are meeting the same experience as myself in these directions and find their field extending inward deeper than they can cheerfully follow. The dangers and difficulties of brain surgery can try the stoutest heart and may well appall the beginner. But we should not forget that the general surgeon has only recently entered this field and that his bravery is sometimes foolhardiness. No one should better know the territory to be invaded than the aural surgeon, who must often guide the hands that he has called in to wield his instruments. And if he does not feel equal to meet the exigencies of such intra-cranial work when first he encounters it, he will not generally be doing his full duty if he does not utilize every opportunity to master the technique of head surgery on the cadaver and on the living, and be prepared to act for himself unless a distinctly better man is at his side.

PRIMARY INFLAMMATION AND ABSCESS OF THE MASTOID; REPORT OF CASE.

Read in the Section on Laryngology and Otology, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

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Cases of the above pathologic condition are by no means frequent, hence my apology for presenting the following:

Mary H., colored, age 10 months, was brought to my clinic at the Southern Medical College on account of a swelling behind the left ear, which the mother said had been forming for the last five or six days. To all outward appearances the child presented a fairly healthy and nourished condition. The mother was very positive in her assertions that there had been no discharge at any time from the auditory canal. She was a strong, healthy woman, and with the exception of enlarged post-cervical glands, no abnormal condition could be found. The child presented numerous glandular enlargements over various parts of the body besides a well-marked case of "snuffles." No history of tuberculosis or syphilis in the family could be ascertained from the mother, as all the other children were healthy and the father could not be seen.

Nothing is more uncertain, however, than the histories usually obtained from the negro race, so that I rarely place any confidence whatever in their statements.

The child was very fretful, especially when the region of the left ear was touched. Behind the auricle and over the mastoid a distinct fluctuating tumor could be diagnosed. The auditory canal was freely patulous with no moisture upon its wall or any signs of a previous discharge such as a smooth, hardened condition of the dermoid layer. The drum membrane was clear and of normal reflex, showing absolutely nothing pathologic. The temperature was practically normal, which still further strengthened the diagnosis of the abscess being syphilitic or tubercular in its origin.

The treatment consisted of a thorough evacuation of the abscess by incision, followed with a curetting of the mastoid cells which communicated with the abscess superficially and which was undergoing a disintegrating process, packing the wound with iodoform gauze, and securing the whole with a protective bandage. Internally the child was put upon syrup ferri iodidi 5 m. three times daily. Under this treatment the wound healed perfectly in ten days, there was no rise of temperature and the child's general health was much improved.

Six months after the patient was again brought to the clinic with an abscess behind the right ear similar in all respects to the one which had occurred behind the left. The history was about the same as previously and absolutely no inflammatory signs could be seen in the auditory canal or upon the drum, nor any signs of a previous discharge. The treatment was the same with excellent results. Since that time the mother reports that the child has much improved and there has been no further trouble with the ears.

Perhaps no single bone in the body, if it may be so called, has received the attention from surgeons and anatomists in the last few years as the temporal bone, and especially that portion of it known as the mastoid. And justly has it deserved this attention on account of the frequency with which it is involved in all severe inflammations of the tympanic cavity, and its importance often in the future life of the patient. In inflammations of the tympanic cavity it is impossible to conceive of an absolute freedom on the part of the interior of the mastoid from the same inflammatory congestion on account of the close proximity and contiguity of the mucous lining. This participation of the mastoid in the inflammatory process of the tympanum may not always be recognized by objective signs, nay, even by the subjective symptoms, yet pathologic anatomy and operative procedures teach us that the interior of the mastoid did become affected simultaneously with this inflammation in the middle ear as is recognized by the obliteration of the pneumatic cells and hyperplastic condition of the antral mucous membrane. For instance, Zuckerkandl, in the examination of 250 temporal bones, found only 36.8 per cent. of the mastoids pneumatic throughout, in 43.2 per cent. he found the same partly diploetic and partly pneumatic, while in 20 per cent. of the total the mastoid presented fatty degeneration, diploetic or sclerosed condition of the bone substance itself.

So it happens that one can readily trace the origin of a mastoiditis or a mastoid abscess when there has been previously or at the same time a severe purulent otitis media, but when a mastoid abscess exists without any discoverable involvement of the tympanic cavity, the etiology is more obscure. Cases of primary mastoiditis or abscess of the mastoid are among the rarities, yet such cases have been reported and for this reason are never without interest.

When I say *primary* I mean an inflammation or an abscess originating in and confined exclusively to the mastoid process, when no inflammatory signs are discernible in the tympanic cavity either at the present time or any time previous which could give the existing process a causal dependence.

Politzer in his last most excellent text-book speaks of primary inflammation of the mastoid as among the rarest affections in aural disease. He divides the inflammation in this region as being limited either to the periosteum or to the pneumatic cells of the mastoid bone proper.

Primary periostitis is extremely rare and is observed more frequently among adults than among children. Such cases have been reported by Voltolini, Blake, Knapp, Jacobi, Turnbull, Swan Burnett, Hotz and Kirchner.

Dench, in his late text-book, speaks only of *primary mastoiditis* without any subdivision, as does also Blake in Burnett's System of Diseases of the Ear, while Politzer makes the more minute subdivision as stated above.

According to this latter author the most frequent causes of periostitis are cold and trauma, while occasionally no cause whatever can be discovered. The usual course and termination of this process is either for inflammation to reach its height in a few days, and the the infiltrate be reabsorbed without pus forming or an abscess results with spontaneous bursting through the walls into the antrum, as observed by Roosa and Ely, Webster, Knapp and others, or the pus may find its way into the auditory canals as in a case reported by Burnett, or finally the inflammatory process may produce a painless carious condition of the superficial lamillæ of the mastoid to be thrown off with the evacuation of the abscess. The same author also recognizes a condition of primary abscess of the mastoid, and in addition to the causes already given mentions syphilis, but fails to mention tuberculosis, which must certainly be placed in this category.

Knapp has reported a case of "primary tuberculosis of the mastoid," where there was an abscess of the mastoid while both the canals and tympanic membrane presented a normal appearance. This writer in quoting Schwartze, who says that primary ostitis and especially primary tuberculosis of the mastoid process is extremely rare, declares that "this assertion may be true in general, but on the other hand as far as bone tuberculosis of the temporal is concerned the rarity with which we diagnosticate this affection may be owing to the omission of special bacteriologic examinations of carious bones of the ears."

To my mind it would certainly be very difficult to tell whether the abscess thus discovered over the mastoid originated in the periosteum or in the bone proper, especially when upon opening the abscess you find the bone substance itself involved. In very young children, like the case reported by me, the communication between the antrum and the overlying superficial surface is much more pronounced than in adults on account of the semi-embryonic condition of the bone substance; hence in such cases it is almost a matter of impossibility to tell whether the abscess is of superficial or of deep origin. In the newborn, according to Hartman and Bezold, the mastoid process is a mere shell surrounding a large antrum, which shows the ease with which the walls would be broken.

My observation and opinion is that in primary inflammation limited entirely to the congestive period, its origin is most frequently in the periosteum; while in abscesses, especially those not manifesting any severe inflammatory swelling over the mastoid cells, I am in full accord with Clarence Blake who says that primary mastoiditis is exceedingly rare, and is usually the result of injury or exposure to cold, or may occur in the course of syphilitic diseases and, I may add tuberculosis. He believes that in the reported cases there has existed, some time prior to its appearance, an inflammation of the tympanic cavity. Yet it is conceivable, where the system is thoroughly impregnated with a specific poison, whether congenital or acquired, that there might be a primary mastoiditis just as an ostitis is liable under the same conditions to occur in any other portion of the body. I believe that all primary mastoid abscesses are nothing more than an ostitis the result of either syphilis or tuberculosis, and by close examination the histories will bear out this conclusion.

There is one especial point which I have noted in mastoiditis in children, and that is where the abscess

is due to syphilitic or tubercular ostitis, the temperature has always been practically normal, while in those cases where the cause has been an extension of the inflammatory process from the middle ear to the mastoid cells, the temperature is usually elevated above the normal at some time during the inflammatory process.

Before closing I wish to mention similar cases which have been published by three American confrères: S. C. Ayers of Cincinnati has reported two cases of the so-called primary abscesses, but admits that there had previously existed an otorrhea, which to my mind excludes these from the cases of primary mastoiditis. Würdemann of Milwaukee has also reported two cases which were thoroughly cured by means of incision and packing. Connor of Detroit reports a case in a child 10 years of age. The drum presented a perfectly normal appearance, and there was no history of a previous discharge. The abscess was thoroughly opened, parts curetted with the final result of perfect healing.

In studying the literature of these cases my conclusions are as follows:

1. Primary abscess of the mastoid is more common than a periostitis.
2. That this pathologic condition is more frequent in children than in adults.
3. The most common causes are syphilis and tuberculosis, and the latter is much more frequent than the text-books would lead us to believe.
4. That the prognosis is nearly always favorable, and a full restoration of the parts is the usual result.

CEREBRAL DISEASE FOLLOWING MIDDLE EAR SUPPURATION.

Read in the Section on Laryngology and Otology, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

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Having lately observed three instances of fatal cerebral complications occurring in individuals suffering from suppurative disease of the middle ear, I accept this opportunity of narrating their histories, hoping they may prove of some interest.

When we recall the anatomic arrangement of this cavity, we are impressed with its immediate proximity to vital structures. The partition that separates the middle ear from the brain and its coverings, is but a thin portion of bone, with no diploe. Having little or no illumination, but being sufficiently supplied with heat and moisture, the middle chamber is an ideal incubator for the propagation of pathogenic microörganisms. Diseases of a suppurative character affecting this locality, have many factors to augment their vitality, but comparatively little resistance to limit their spread. It requires no stretch of imagination to picture a purulent inflammation extending through the roof of the tympanic cavity, and attacking cerebral structures.

Observers agree to three forms of pyogenic intracranial invasion arising from middle ear suppuration, *i. e.*, brain abscess, meningitis, and sinus thrombosis. According to Koerner,[1] almost all brain abscesses, originating from purulent aural disease, are situated near the primary collection of pus, in the ear or temporal bone. Jansen, however, could not discover an extension of the disease from the temporal bone to the brain in any of the cases of abscess of the temporal lobe upon which he had operated, though the collections of pus were directly over the tegmen tympani. To reach them, the posterior and upper wall of the mastoid had to be removed. In 184 instances of intracranial involvement observed by Jansen, in three and a half years, at the Berlin Clinic, 148 were extra-dural abscesses, 35 were thrombosis of the lateral sinus, and only five were brain abscesses. In the extra-dural lesions, the purulent matter was more often found occupying the posterior cerebral fossa. He has observed that extra-dural abscesses are the most frequent complication of acute suppurative otitis media. In cases of doubtful diagnosis he recommends exploratory operations, and further remarks that deep seated collections of pus are best reached after removal of the entire posterior wall of the mastoid process.

It is not always a simple matter to differentially diagnose the presence of existing cerebral disease. When the abscess occupies the motor zone, the direct functional symptoms resulting, assist materially in arriving at a conclusion. If, however, this area is not involved, it requires careful observation to localize the seat of trouble. Picque[1] remarks, that a persistent cephalalgia, referred to a distinct region, with coma and slowing of the pulse, indicate cerebral suppuration. If the lesion points to an involvement of a motor zone, this locality should be trephined at first, and the mastoid opened later. If on the contrary, indistinct cerebral symptoms arise, the mastoid should be primarily attacked. Should the unpleasant symptoms still persist, further exploration must be carried out.

In endeavoring to illuminate the haze, which at times obscures a positive diagnosis in otitic-cerebral cases, a statement has been made that where bone conduction is present, the abscess is probably situated in the cerebrum; if the bone conduction is absent, the disease is presumptively in the cerebellum. This theory was deduced from the supposition that the pyogenic organisms reach the cerebellum by way of the internal ear. In this manner the infectious process spreading along the auditory nerve and its covering, abolishes bone conduction. Macewan[2] claims that as a rule, the cerebellar abscess arises from the disease extending from the sigmoid sinus, and not from the internal ear, so that the seventh and eighth nerves in the internal ear remain unaffected, and are capable of performing their function. If the mechanism of hearing is not disturbed, the auditory nerve will conduct sound both by air and bone, even though the cerebellar abscess exists. Should, however, the septic process extend to the cranial cavity through the internal ear, bone conduction may still be present. This fact was demonstrated by a case, reported by Macewan. In this patient auditory conduction was absent, but bone conduction was more acute on the affected side, than in the normal ear. Postmortem examination revealed extensive purulent leptomeningitis, chiefly marked in the posterior fossa, surrounding the right internal auditory meatus. The seventh and eighth nerves passing through the occluded internal auditory meatus, were swollen and compressed; while on the healthy side, the same nerves occupied only one-half of its caliber.

[1] Annals of Ophthal. et Otology. Vol. iv. No. 4.
[2] British Med. Journal 1820-1895.

Both aerial and bone conduction may be absent without being the result of cerebellar disease. This may occur if some affection of the auditory nerve previously existed. In such a case seen by Macewan, the brain lesion was found to be a cerebral abscess. From his observations he concludes that whether bone conduction be present or not, it is not a reliable sign in localizing the cerebral complication. These contradictory experiences clearly demonstrate that no symptom can be taken as a *vade mecum*.

Otitic-cerebral abscess is more apt to be the result of a prolonged suppuration and not of an acute affection. Eulenstein,[3] after collecting authenticated cases, could find but eighteen of brain abscess originating from acute disease of the temporal bone. To this number he adds one of his own, operated upon with a good result. In all these cases the cerebral disease was situated upon the side of the affected bone; the greater number being on the left. Koerner, on the other hand, found the right side to be most frequently attacked. In two of my cases the disease was on the right side. Of the eighteen cases above mentioned, thirteen abscesses were found in the temporo-sphenoidal lobes and four in the cerebellum; the situation of the other one is not given. Among the symptoms observed in connection with cerebral abscesses were: Irregular fever; persistent headache (being one of the most constant symptoms, due to intracranial pressure); retardation of pulse; choked disc; interference with speech (in the left-sided disease); paralyses (facial, hemiopsia, ptosis, abducens on the same side). Other manifestations were, incontinence of urine, photophobia, increased tendon reflex, hemi-anesthesia and hyperesthesia. Eleven patients were operated upon. Of these, five died (two cerebellar, three temporo-sphenoidal); and six were successful (one cerebellar and five temporo-sphenoidal).

During past years there has existed a tendency to wait for pronounced symptoms before attempting to discover the cerebral complication. Clinic experience has shown us that temporizing under such circumstances is not only unjustifiable but frequently productive of fatal consequences. It matters not in what portion of the economy a septic focus exists, our efforts should be directed toward the prompt limitation of its activity. Accepting this axiomatic principle *pro vero* we should unhesitatingly attempt to check the stride of an infectious process when it has reached so vital a region. Under present antiseptic precautions, surgical treatment can be undertaken without much fear of external contamination. It is not my intention, however, to sanction hasty and premature operations in these cases, but rather to suggest the prompt employment of effective measures, when indications arise. Suppurative otitis media should not be treated (as is often the case) in a nonchalant manner. Its serious aspect should be vividly pictured to the patient, and the possibility of threatening dangers should be emphasized.

Case 1.—M. C., female, 8 years of age, had a chronic discharge from the ears for three years. Under local treatment the suppuration was checked and no further trouble was noticed. About two years after the cessation of the aural trouble the child fell and struck the back of the head with considerable force. At the time of the accident the child was unconscious, and on recovery complained of pain in the head. Three weeks elapsed before any further symptoms appeared. At this time the mother discovered that her daughter was not feeling well and Dr. Charles Hoffman was called. As nothing definite could be found, the condition was treated symptomatically. Irregular temperature became apparent and some pain was complained of in the region of the left ear. Recalling the former otitic trouble, Dr. Hoffman asked me to see the case with him. No local signs of an inflammatory process could be seen. The temperature was 101 degrees F. rectum. No swelling or tenderness of the mastoid or jugular region existed at this time. Treatment was continued as before.

A few days later convulsive seizures together with a somnolent condition of the child was observed by Dr. Hoffman. Applications of ice were ordered to the head and neck. Drs. L. Weber, Hoffman and myself saw the case in consultation and agreed that meningitis existed, but that the character of the disease could not be definitely diagnosed. As no active ear symptoms were found at this visit, a tubercular manifestation was suspected. Temperature of a septic character persisted and the semi-stupor was rather more marked. Forty-eight hours after our consultation pressure over the mastoid revealed some tenderness. We decided to operate at once. The usual opening was made under ether. The cortical layer of the mastoid process was found sclerosed, but in chiseling more extensively some pus was discovered. The quantity evacuated was very little. Repeated hypodermic stimulation had to be given while the operation was in progress. The patient's serious condition at this time did not justify further exploration, so the wound was packed with iodoform gauze. On the following morning I trephined an opening into the middle cerebral fossa, three-quarters of an inch above the external auditory canal. The dura was bluish in color, but did not pulsate. A hypodermic needle was introduced and about a drachm of pus withdrawn. Two more buttons of bone were removed with the trephine, and the connecting bridges of bone were cut away with the rongeur. An incision was then made through the membrane, and fully three ounces of fetid pus escaped. Gentle antiseptic douching was carried out and the parts packed with gauze. As in the previous operation frequent subcutaneous stimulation was found necessary.

Paralysis of the right arm and leg had appeared. Pupils reacted to light in the evening of the day of the second operation. Coma continued, paralysis of the sphincters was observed, and on the following day dissolution occurred.

Case 1 is an illustration of the irregular course a temporo-sphenoidal abscess may run. Though previous ear trouble had existed, no symptoms pointed to this organ at the beginning of the fatal complication. The quantity of pus present in this cerebral abscess demonstrates that such a state of affairs may exist for some time without producing characteristic symptoms. It is possible that the traumatism in this case may have been an exciting factor. The question arises, whether we are justified in opening the mastoid process or cerebral cavity, in cases presenting a similar train of symptoms which give evidence of previous suppurative otitis media, though presenting no active manifestations.

Case 2.—F. M., aged 16 years, white, was admitted to the Manhattan Eye and Ear Hospital, Oct. 5, 1895, with the following history: For the past twelve months had chronic suppuration of the right ear, resulting from the measles. The discharge was not constant, but whenever it stopped severe pain set in, which ceased when drainage was reëstablished. About three weeks before his appearance at the hospital, after an exposure, he was taken with severe pain over mastoid, in and around the ear. Pain had been constant since. At this time the external parts were considerably swollen and tender: temperature 100 degrees F.; pressure in front of tragus caused pus to flow freely. Under local treatment the patient progressed nicely until about 2 o'clock A. M., Oct. 6, 1895, when becoming delirious, he was then sent to the hospital.

Condition on admission: Delirious, restless and anxious expression. Temperature 104 F.; pulse 110. Right mastoid swollen; slight redness extending well down over neck. Marked tenderness over mastoid, front of ear. Decided pulsation in right cervical region. On slight manipulation with probe and cotton profuse offensive discharge came from ear. Meatus perforated in postero-inferior quadrant.

Patient was etherized and a mastoid operation done under strict antiseptic precautions. Small quantity of pus was found in cells. Wound cleansed with bichlorid solution and packed with iodoform gauze. Morphin hypodermic was necessary to quiet during night.

[3] Monat. für Ohrenheilk. 1895.

October 6. Very restless this A. M. Temperature 100 F., pulse 110; complains of sick stomach, but does not vomit; does not take nourishment.

October 7. Temperature 98 F., pulse 110; still restless; takes little nourishment.

October 8. Extremely restless; constant tendency to get out of bed. Temperature 99.6 F., pulse 110. Dressing removed. Considerable pus in canal and mastoid. Cleansed and irrigated with bichlorid solution, 1-10000; packed with gauze and bandaged, leaving external auditory canal exposed for douche, every two hours. Morphin to quiet; strychnin and spirits frumenti ordered to be given at the discretion of the house surgeon.

October 9. Still restless; temperature 100 F. Takes nourishment quite freely. Mastoid dressed as before. Wound clean and healing.

October 10. Temperature 98 F., pulse 110. Not quite so restless. Voids urine in bed.

October 11. Temperature 97 F., pulse 120; restless; no chills; stimulants increased.

October 12, 8:30 A. M. Some signs of left hemiplegia. Not so restless; breathing slightly stertorous; 9:30 A. M., will not take stimulants. Died with symptoms of compression at 12:15 P. M.

Postmortem examination showed an extensive cerebral abscess of the temporo-sphenoidal lobe. A large quantity of pus escaped after the dura was incised. Four finger tips could be readily introduced into the abscess cavity. The dura was thickened and on the cerebral surface of the tegmen a necrotic area was found. No involvement of the sinus was observed, the extension of the disease being by continuity of tissue, and not through the lymphatics.

On Oct. 11, 1895, the patient was doing so well, even though the temperature only registered 97 F., that further operative interference was contraindicated. Had an opening been made on this day into the middle cerebral fossa it certainly could not have saved the patient, as the disease had then assumed extensive proportions.

Case 3.—Phoebe B., deaf mute, 62 years of age, was referred to me at the Manhattan Eye and Ear Hospital, May 6, 1895, for mastoid operation, with the following history:

For past year has had pain in right ear, with scanty discharge. Three months ago, facial paralysis of right side occurred suddenly. The patient had been operated upon for aural polypi, which completely filled the external canal. There was a profuse and very offensive discharge from the right canal, which was somewhat benefited by the removal of the granulation tissue. These growths rapidly reappeared so that repeated attempts at their eradication had to be made.

On May 5 the mastoid process became boggy and very tender. Treatment failed to relieve the pain and swelling, so patient was turned over to me for operation.

May 6, 3 P.M. A Stacke operation was performed, together with the removal of almost the entire tip of the mastoid. The osseous destruction was very extensive, the dura being encountered on passing the probe upward. Thorough curetting of the posterior and inferior surfaces of the diseased tissue was carried out. Fearing perforation into cerebral cavity, gentle manipulation in the upper portion of the wound had to be observed.

May 7. Temperature 99.4 F. Patient doing well.

May 8. Temperature normal. Dressing removed. Some discharge from the canal which was not offensive. Otherwise wound clean. Packed as before and ordered cleansed with peroxid of hydrogen and corrosive sublimate solution.

May 11. Some slough on posterior wall of cavity. Discharge increased, with some odor. The slough was removed and Labarraque's solution ordered as a cleanser.

May 18. Improving; wound clean and rapidly filling. Temperature normal.

May 20. Granulations exuberant. Touched with caustic.

May 25. A small sinus was found on inner wall of cavity, filled with pus; probe showed necrotic bone. Sinus curetted, cleansed, and packed with gauze.

May 30. Improving; wound clean; slight odor from sinus.

June 9. Odor becoming offensive. Some débris curetted from the wound. Inability to move left arm and leg was noticed.

June 11. In the morning, a hemorrhage occurred from the mastoid, appearing through the ear, nose and throat, and saturating the dressings. 7 P.M. Severe hemorrhage through naso-pharynx. Post-nasal tampon applied. Source of bleeding could not be discovered.

June 12. Another hemorrhage, which was checked by tamponing mastoid opening. Hypodermic stimulation.

June 14. Patient gradually grew weaker from the loss of blood, and died at 6:30 P.M.

The autopsy revealed marked necrosis of the petro-mastoid portion of the temporal bone. The probe could be readily passed into the posterior and middle cerebral fossæ. Ulceration of the sinus was found to be the cause of the severe hemorrhage. Softening of the right temporo-sphenoidal lobe of the brain was recognized.

Owing to the congenital condition of the patient, subjective symptoms were not readily ascertained. There can be no doubt as to the chronic character of the destructive process, as the facial paralysis had occurred three months previous to the case coming under our observation. So extensive was the disease, that after the operation, a probe could be passed into the mastoid opening for a distance of almost two inches, measured from the external surface.

Case 4.—Though this case can not be positively classed as a cerebral involvement, nevertheless I mention its history for the purpose of emphasizing the difficulty we meet with at times, in arriving at a correct diagnosis.

James B., 34 years old, had scarlet fever twenty-five years ago, which resulted in a chronic suppurative otitis media, which has been more or less active ever since. During the past four years the discharge has been more profuse, and frequent attacks of severe pain have been experienced. Relief from the pain was noticed, whenever the discharge flowed freely. Blood was at times found in the discharge. On May 24, 1895, he was admitted to the Manhattan Eye and Ear Hospital, with intense pain in the left ear, from which a scanty flow of pus was observed. Some infiltration of the soft tissues of the external auditory canal existed. A small perforation in the postero-inferior quadrant could be seen on careful inspection. Anterior to tragus, the parts were tender, but no pain or swelling over mastoid.

General condition.—Patient is anemic, and seems to be suffering severely. Tongue heavily coated; bowels constipated; temperature 103 F.; pulse 140.

May 25. Bulging of membrane. Tympanum liberally incised. Hot douching every two hours, and boroglycerid tampons were ordered; also calomel, until bowels moved freely.

May 26. Slight improvement. Temperature 101 F. Some headache and pains in back of neck. Leeches applied. No definite conclusion could be reached.

May 30. Temperature still high. Griping pains in bowels; calomel stopped. Marked tendency to constipation.

June 1. Great pain in back of neck. Temperature 102 F. Counter-irritation applied.

June 2. Pain somewhat less, but still present. Ice to neck ordered. Bromid was prescribed.

June 4. Considerable pain in neck. Peculiar discharge from bowels resembling that of enteric fever. Temperature 104 F. Our medical consultant examined the patient, and suspected thrombosis of the lateral sinus.

June 5. Chill lasting twenty minutes. Patient much exhausted. Strychnin and whisky freely administered. Temperature 104.2 F.

June 6. Chill lasting fifteen minutes. Quinin and fluid extract digitalis given continuously. Temperature 103 F. Dr. A. H. Smith advised surgical interference. At 8 P.M. I operated. Periosteum was detached from mastoid with great difficulty. The bone was found sclerosed throughout its entire extent. No pus was discovered. On opening into the lateral sinus, nothing abnormal was found. Sinus and mastoid were packed with iodoform gauze. During the operation patient received hypodermic injections of strychnin.

June 7. Recovered nicely from operation.

June 9. Symptoms of abscess of liver appeared, with great exhaustion.

June 12. Temperature still elevated. Occasional chill followed by pronounced depression, which finally terminated the patient's existence. Unfortunately no postmortem was allowed. We were inclined to believe that the liver symptoms were the result of metastasis. A cranial lesion in the form of a cerebellar abscess was suspected.

We must not overlook the fact that disintegration of osseous tissue may take place, without causing painful symptoms. This is especially characteristic

of a tubercular process; and in the region of the ear, marked destruction may occur without involving the integrity of the membrana tympani. Such a condition is more apt to affect children of a strumous diathesis. In such instances the ulceration may soften the roof of the tympanic cavity, and so attack the brain. It furthermore may generate miliary tuberculosis of the lung and other organs, by entering the circulation, through the antrum and mastoid cells, or by penetration into the jugular fossa or sigmoid sinus.

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DISCUSSION.

DR. MAX THORNER, Cincinnati—The papers are of more than usual interest, because the question of operative interference and topographical relations are comparatively new. Ordinarily topography of the temporal bone is insufficiently treated in text books.

The antrum is ordinarily larger and the floor of it is so much below the level of the aditus that pus can not flow out according to the laws of gravitation. Thus it happens that in cases where the inflammation is violent, before we think it possible, we have the whole mastoid process converted into a pus cavity. It has often been said that the ordinary acute otitis media will, if attended to at once, never lead to serious complications. This is, however, not my experience. Sometimes serious complications will ensue in spite of all that we do.

Dural abscesses, the essayist stated, may exist some time without distinct symptoms. Only seven weeks ago I had a case of acute otitis media following influenza, which was very serious from the start. The temperature was never lower than 102 and the discharge was profuse for weeks. At the same time severe pain developed over the temporal bone. All the symptoms of a mastoiditis were present when, after six weeks' treatment, I opened the temporal bone. It was one large cavity filled with pus and granulations. When cleansed thoroughly I found that a small amount of pus had collected below the posterior and anterior wall of the enormously large antrum and the dura-mater. About five or six drops of pus escaped from this location, after enlarging the pin-hole opening which existed in the bone. The patient made an excellent recovery. I believe that in a case where we have mastoiditis, which is not primary, we can not cure it by simply making an incision through the integument, but only by entering the cavity and removing the pus. But in cases of primary or secondary periostitis of the mastoid process, without any accumulation of pus, I do not see why Wilde's incision should not suffice.

In regard to that part of the paper referring to cerebral abscesses as one of the possible complications, I will report one case which I had, only a few months ago, under my observation. It is interesting on account of the enormous size of the cerebral abscess. The patient had been in a comatose condition for three weeks when received at the Cincinnati City Hospital. The history was meager, but it was found that there had been suppuration for some time previous. It was stated by relatives that a little piece of bone had been discharged into the auditory canal. There was a profuse purulent discharge from the right ear which was exceedingly offensive; caries of the attic could be determined. Upon opening the antrum I found it filled with pus and granulations, and the tegmen tympani bare; in this a very small perforation was found, through which a few drops of pus escaped. This opening was gradually enlarged, when a great amount of pus, very offensive and of a green color, came out. The abscess cavity was large. After establishing thorough drainage the wound was closed. The patient recovered from the comatose condition, but died in thirty-six hours after the operation. It was the largest abscess that any one connected with the hospital ever saw, being about the size of a small orange and occupying the right temporo-sphenoidal lobe. The brain tissue within one-fourth and one-half inch of the walls of the abscess cavity was softened and discolored.

DR. MYLES—My experience has taught me that nothing but frequent demonstration of these practical anatomic points will fix them permanently in the mind. The topography of the antrum and mastoid varies in different cases, and in different ages. The doctor has presented some remarkable specimens, but I would have presented them in a little different way. I leave all the external landmarks on the specimens, that will not be detrimental to them, as I find that in this way the mind is better enabled to grasp the situation. A complete analysis of the relation of every structure is essential in the proper comprehension, and in the teaching of this department. It is well to instruct the student so that he can operate safely, and without penetrating the lateral sinus under any topographic condition. One good rule in operating is to cut carefully and deliberately, and to start by chiseling a broad beveled opening rather than a round narrow hole. If he clings closely to the auditory canal, and cuts in a spiral direction upward, inward and forward, he will reach the antrum quickly and surely. If you wish to be a little more direct, you may start a little higher in the suprameatal triangle and chisel directly inward. The chief thing to avoid is injury to the facial nerve, which usually comes outward near the junction of the floor of the antrum and the posterior superior walls of the tympanic cavity.

In regard to children and to the paper of Dr. Roy, a great many cases of swelling posterior to the ear, and over the antrum or mastoid, can be cured by a Wilde's incision. In that class of cases where there is no pus discharge in the canal, it is usually due to periostitis or caries either of traumatic or tubercular origin, or extends through a small venous aperture from the antrum, and in certain cases the pus burrows from the attic along the external auditory canal, and causes local abscess on the roughened area of the mastoid process. A great many of these cases recover after simply incising and draining, without curettage or interference with the middle ear.

DR. FRANK ALLPORT, Minneapolis, Minn.—I must take issue with what has been said concerning the unnecessary frequency of such operations. My own tendencies are somewhat conservative, especially where serious operative procedures are contemplated, but in this line of cases I emphatically believe we do not operate enough. The history of the mastoid operation, and now the history of operations for otitic brain abscess, leads us through the uncertain maze of the past, when such procedures were regarded with mingled feelings of awe and aversion, to the triumphant place now universally accorded them in the modern annals of surgery, and I predict for them, and especially the latter, a much higher and more exalted position than that at present possessed. The time will come when the human brain will no longer remain a *terra incognita*, but will be successfully explored by the progressive modern surgeon.

No man should venture upon such surgery unless thoroughly prepared therefor by accurate anatomic, topographic and pathologic studies, both theoretic and practical; but when thus fortified, and then brought face to face with a case of this character, he should not hesitate. In a correctly recognized case of brain abscess there is no other course to pursue, and the patient may as well die from an unsuccessful operation as from a timorous and too conservative therapeusis. It is astonishing how much interference the brain will endure, as is instanced by a case I will briefly recite: The patient was a man injured in a trolley car accident, producing a basal fracture and bleeding from the ears, followed by some discharge. Cerebral symptoms ensued, and I was called to diagnose a mastoid abscess, which I could not do. The consulting physicians and myself thereupon diagnosed a probable brain

abscess and the patient was accordingly trephined. Thorough exploration was made in many directions, starting from the temporo-sphenoidal lobe, but no pus was found. The wound was closed and death speedily expected; but the patient quickly and completely recovered, whether from relief of pressure we do not know. So, death need not always be expected, even when an operation is made and no pus found. I do not repeat this instance to encourage reckless operating, but to endeavor to dissipate the reluctant attitude assumed by surgeons when cerebral operations are mentioned.

It is not necessary for a man to be an aurist to open the mastoid process. Any surgeon properly qualified may undertake it, but it should be remembered that the operation has developed from a mere gimlet-hole opening or vent to a thorough removal of the outside mastoid shell, and a conscientious following up of every pus avenue, *no matter* where it may lead. We never know, therefore, when we open a mastoid process, what may be the ultimate issue involved, and we should be prepared to meet and care for any and all emergencies; and to treat pus deposits in this locality upon the same general principles observed in other portions of the body.

In regard to the method of operating, I prefer the dental engine, with fresh, sharp burs. It is gentler, quicker and smoother than the chisel, and the field of operation can be observed with great accuracy.

Concerning Wilde's incision, I believe it to be indicated but seldom, but when used, unless a pus deposit upon the outside of the mastoid is evident, the incision should be made in the inner, upper and posterior portion of the meatus, as the mastoid cells are here much more in evidence than at the hard external mastoid plate. At best, however, the Wilde's incision is usually but a temporizing procedure, through which valuable time is lost; and still I can not say I have *never* seen benefit ensue through its agency.

DR. CLINE—I have seen some remarkable cases of mastoid disease and I have been fully persuaded that too many extensive operations are performed on these cases. I was called to see a man seventy years old who had a discharge of pus from his ear for ten weeks, and for eight days and nights could not lie down on account of pain. On making Wilde's incision the knife passed into the bone, which seemed soft and pulpy. Pain subsided immediately and he was able to lie down. A draining tent was introduced, and the second day there was a free discharge of pus. I prescribed iodid of potassium and he made a rapid recovery without any scraping or chiseling away of the bone.

In another case the ear had been discharging for fourteen weeks. The ear was very painful and over the mastoid the tissue was very much swollen and of a very dark purple color. His condition was such that, with his previous history, I considered an operation was indispensable. I directed him to return home and send for a surgeon in his town and have the operation performed at once. The doctor who took him in charge decided to wait a day or two before operating. He put him on ten-grain doses of iodid of potassium every two hours. The patient began to improve, in three days the pain had disappeared and in seven days the discharge from the ear ceased, and since then (two years) he has had no further trouble.

I might detail other cases but these will suffice for the plea for conservative, early extensive operating and the free use of the iodids in these cases.

DR. T. H. SHASTED, Galesburg, Ill.—I am inclined to believe that Politzer's ideas on this point are correct. He says that in the chronic mastoid troubles the thorough operation should be done. The antrum should be opened, and, if then found necessary, the tympanum also. In acute cases, however, the thorough operation is seldom necessary. The abscess usually lies in the vertical portion of the process and does not, as a rule, communicate with the antrum. If in such cases, we cut down to the antrum, we shall infect those parts when there is no necessity for it. In those cases where the pus bursts through the cortex spontaneously, there is very little to be done. We can easily remove whatever comes away and that is about all there is to be done. It is seldom necessary in such cases to make a thorough operation on the ground of preventing chronic fistulous discharge. I have frequently seen such cases and they almost invariably do well in the course of two or three weeks at the longest.

Dr. Roy's case reminds me of my own, that of a lad about 18 years of age. There was no suppuration from the ear, nor sign or history of former suppuration. At the operation I found very little pus, but some carious bone. I had the case diagnosed as primary mastoiditis. But afterward I was somewhat surprised to receive from his parents a history decidedly different from what they had first given me. He had had a slight discharge of short duration some years before. No doubt in all these cases there has been previous tympanic trouble, of which the membranic signs have been effaced and the history forgotten.

DR. B. ALEXANDER RANDALL, Philadelphia, Pa.—I wish merely to refer to the point already made that these mastoid and tympanic cases are the hot-bed of tuberculosis. Cases that are not primarily tubercular are here transformed, and we have the tubercular infection passed into the whole body.

While I do not believe in Wilde's incision, I think the whole matter can be set down as largely one of technique; and the way in which we proceed will depend upon our instruments.

DR. EDWARD J. BERNSTEIN, Baltimore, Md.—I do not believe that the relative impunity with which one can enter the brain constitutes any warrant for the frequency with which some undertake these operations. I have operated a number of times with a good percentage of successes; on the other hand I have had cases, of late, where everything indicated the necessity for operation, and I plead with the patient for the necessary permission, but owing to their persistent refusal, I was forced to keep to less radical means. Many of these latter patients recovered and are apparently well. They are not safe from recurrences, as are those who submit to the radical procedure, but an immunity from attack for one or two years speaks well for their side of the question. I have never used Wilde's incision, because Leiter's coil, mercurial ointment, and other local applications have always served me where the regular mastoid operation was not indicated.

ELECTROLYSIS FOR THE REDUCTION OF SPURS OF THE NASAL SEPTUM.

Read in the Section on Laryngology and Otology, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5–8, 1896.

BY W. E. CASSELBERRY, M.D.

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CHICAGO, ILL.

A year ago I gave the results of recent experience with electrolysis for the reduction of spurs of the nasal septum, in a paper read before the section of Laryngology and Otology of the AMERICAN MEDICAL ASSOCIATION,[1] and later in another paper before the American Laryngological Association,[2] and it is not my purpose in this supplementary report to repeat the technical details of the procedure or to recite cases at length, but simply to formulate conclusions bearing upon the exact limitations of this method.

The bibliography having been presented in previous papers, will be omitted at this time; suffice it to

[1] JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 1895.
[2] Transactions of the Am. Laryn. Assoc., 1895; New York Medical Journal Aug. 31. 1895.

say, that a few European operators have advocated the method and some have praised it with seeming extravagance.

Customarily spurs or excrescences of the septum narium are removed by surgical means, by the knife, saw and drill, and these are the methods employed by myself in the majority of cases. In skillful hands they are more rapid, more precise, and in the case of large, bony spurs, certainly more effective than is electrolysis. The surgical method, however, is more or less sanguinary and otherwise far from agreeable to contemplate or experience. In cases of major degree, where the excrescence is of bone and of large size, occasioning pronounced occlusion of the nostril, together, perhaps, with serious secondary catarrhal symptoms, pressure neuroses, middle ear affections, or impairment of the general health, one should not hesitate to sacrifice the spur and if need be by the surgical method. The operation, the discomfort subsequently for a few days of an iodoform gauze packing as a preventive to hemorrhage, and even the substitution for normal mucous membrane over the operated area of a cicatricial mucosa with its tendency to dry crustation, are but trifling inconveniences in comparison with the benefits conferred in properly selected cases.

But there are cases of minor degree, small spurs of cartilage or of cartilage and bone and thickened areas which seem scarcely deserving of surgical treatment, but which one would like to see resolved for the sake of the additional nasal space and better drainage which would thereby accrue to the patient. There are also patients of delicate physique and those of highly sensitive and uncontrollable nervous organizations, and bleeders, also, whom one hesitates to subject to the regular operation. And, again, there are patients who willfully refuse an operation, however needed or suitable the case may be.

To what extent can electrolysis be utilized for the relief of these subjects and what sort of spurs can be completely removed, and in which can reduction in size only be expected?

Concerning the physics of electrolysis it is only necessary to state that it is a process of chemic disintegration of tissue under the influence of a direct or galvano-electric current by which water and salts are separated into their component parts, oxygen and acids being attracted to the positive needle and hydrogen and the alkalin bases to the negative needle. With one exception I have employed the preferable bi-polar method by which two needles, one representing each pole, are inserted into the spur. My needles are made of iridoplatinum, which is nearly as stiff and hard as steel, twenty millimeters in length, about one-half millimeter in thickness, soldered parallel three millimeters apart to copper bars, which run through a light handle. Steel needles are perhaps more commonly employed and I have used them somewhat.

The process of electrolysis is not to be confounded with galvano-cauterization. While fine electrolytic needles can be made to burn by a sufficiently strong current, my needles as used with a current adequate for the purpose of electrolysis do not cauterize. The current strength necessary for electrolysis of nasal spurs is from fifteen to forty milliampères, measured with the resistance of the spur in the circuit, and to supply this current from fifteen to twenty cells of a galvanic battery would ordinarily be used with a corresponding electromotive force of from twelve to twenty volts or more. The inconvenience of this apparatus and especially its unreliability when called into use only at irregular and prolonged intervals, has deterred many from trying the electrolytic method. I sought to avoid these annoyances by adapting the Edison electric light circuit to the purpose by means of lamp resistance and the McIntosh current controller. It is as easy and readily applied as the galvano-cautery, except for the few minutes' additional time that its energy needs to accomplish the work. When used it is necessary only to adjust the milliampèremeter and insert the needles.

A current suitable for electrolysis should be characterized by moderately high tension or voltage and comparatively low current strength or ampèrage. The Chicago-Edison current has an elecromotive force of 110 volts, which must be reduced by the current controller. During the last year I have used only eleven volts or less. The ampèrage depends on the amount of resistance in the circuit, but it also can be correspondingly reduced by the resistance of a lamp and the controller so that with the spur in the circuit it measures the requisite number of milliampères. The current controller was described at length in my preliminary report. It is designed only for the continuous current and can not be employed with the alternating for the purpose of electrolysis, nor is it adapted to electro-cauterization.

I now employ the controller with only one lamp [in series] as additional resistance in the circuit, which aside from the action of the controller reduces the initial electromotive force to fifty-five volts. During the year I have used a current of only eleven volts or less, secured by advancing the decimal slide of the controller to 1 before the needles are inserted into the spur, which removes coil resistance sufficient to provide one-tenth of fifty-five volts or five and one-half volts. Then, after insertion of the needles, the centesimal slide is advanced gradually, each point removing coil resistance in fractions of hundredths, which occasion little shock, until if need be ten one-hundredths, or another five and one-half volts are added. With this arrangement the meter will usually register from ten to thirty milliampères, which with an exposure of seven to twelve minutes is adequate.

The chief difficulty in the reduction of cartilaginous spurs is to determine exactly when sufficient destruction has been effected, and no rule of guidance in this regard can be formulated, experience and delicate judgment only being of service. Nor can one always foretell the range of action or distance from the needles in all directions to which the destruction will extend. The ideal action is to produce just enough disintegration within the spur to lead to subsequent absorption without total destruction of the surface mucosa, which will therefore be reproduced in the process of cicatrization more perfectly than is usual after the cutting operation. If, however, the action be more intense and the slough produced be large it will separate as a whole with corresponding complete destruction of the mucous membrane. In the same manner by too intense an action a slough extending through the cartilaginous septum can be caused and perforation result. This is especially apt to occur while electrolizing a spur which surmounts the convexity of a bent or deflected cartilage.

A simple deviation or bending of the septum can not be corrected or straightened by electrolysis and its use in such a case can only result in perforation.

If in addition to the deviation there is also a spur, that is, conjoined deviation and excrescence, the thickening may be reduced or removed by electrolysis, but the deviation will remain. These distinctions should be held clearly in mind when considering in any given case the applicability of electrolysis. It is true that perforation is prone to happen when operating on similar cases by the surgical method, for it is not always possible to estimate exactly the degree of concavity of the opposite side, and a closely reduplicated deflected septum can be mistaken for a spur and perforation result on cutting it off. But with electrolysis, in addition to these there is the further uncertainty of being unable to tell in advance exactly how far the action will extend. A close watch should be maintained in the opposite nostril and the electrolytic action discontinued on the slightest mottling in hue or escape of gas from that side of the septum. But there is reason to think that too great destruction can be effected even short of the production of these danger signals and other safeguards, such as not inserting the needles too deeply or permitting the treatment to endure too long, should be kept in mind. The duration necessary depends somewhat upon the current strength, but with the meter registering from fifteen to forty milliampères I have not found it necessary to exceed from six to eight minutes for the devitalization of cartilage. The continental authors mention fifteen to twenty-five minutes as the duration of their séances, which would seem unnecessarily long for a single insertion of the needle, although I sometimes, in order to act upon a larger area, make two insertions at one sitting, which must then endure for about fifteen minutes.

I have accidentally made one small perforation out of a total of sixteen cases treated by electrolysis. In nearly this proportion they will likewise happen from the surgical treatment. In this one case no appreciable harm resulted, although I object on esthetic grounds to perforations and think that all possible care should be taken to avoid them. Beside, by encouraging incrustation, they sometimes do occasion annoyance.

On the other hand, if one is too timid in the application of the remedy, inserting the needle too superficially, using too small a quantity of electricity and for too brief a time, one will accomplish little or nothing beyond occasioning a disagreeable inflammatory reaction for a few days. Pain during the treatment need be but trifling, but the sensation is peculiarly disagreeable and tends to cause syncope. This tendency might be avoided by making the application in the recumbent position. My arrangements have not been suitable for this.

As to whether large spurs or ledges of bone can be resolved by this process of electrolysis opinions differ. My own experience is decidedly in the negative. I have been unable to penetrate even by steel needles the bony parts of spurs and failed to cause their resolution, even when the needle could be forced into approximate position. This experience is confirmed by Newcomb,[3] Chiari cited by Lowman,[4] and others. On the other hand, Moure[5] and also Bresgen,[6] lead us to infer that they are successful with bony spurs, which contention is confirmed by Ballinger,[7] who, however, fails to give particulars in this regard. Bone differs in degree of hardness and, also, it is quite conceivable that spurs, which consist chiefly of cartilage with small spicula only of bone running through the center, that in addition to the cartilage the bone, by having the needles run into its immediate proximity, may be devitalized; but large spurs which consist chiefly of bone, often of iron-like hardness, will certainly resist this method.

I have treated by electrolysis sixteen cases, and these may be classed in three types according to the composition and location of the spur and the degree of success attained. With the exception of a case representative of each type they will be tabulated without detail and with mention only of salient features:

TYPE I.—STRICTLY CARTILAGINOUS SPURS.

Case 1.—Mr. H. H. C. M., somewhat advanced in years. He complained of nasal stenosis and distinct paroxysmal asthmatic symptoms. Examination disclosed hypertrophic rhinitis, conjoined with a cartilaginous excrescence of the right side of the septum, well in front and sufficiently large to approach the collapsed ala. The galvano-cautery applied to the turbinated bodies restored the patency of the left nostril, but on the right side the spur interfered with the attainment of a perfect result and the symptoms in part continued. Feb. 10, 1896, electrolysis applied to the spur, thirty-five to forty milliampères, for seven minutes. The result is very satisfactory. A slight prominence farther back remains, but the space gained by the reduction of the spur is adequate for comfortable respiration. It could be wholly removed by a second application, which, however, now seems unnecessary. He reports entire freedom from asthmatic symptoms, disposition to "colds" and nasal discomfort, and while this happy result can not be wholly attributed to the reduction of the spur, that was an essential part of the treatment. The case exemplifies a considerable class of individuals, who if the less formidable procedure of electrolysis were not utilized to reduce the excrescence, would continue indefinitely to bear with the discomforts incidental to the presence of a spur rather than undergo the surgical treatment. The surface shows cicatricial markings, but mixed with natural mucosa and there is no annoyance from crustation.

Case 2.—Mr. R., right nostril entirely occluded by a cartilaginous spur five or six millimeters in thickness, which is implanted upon a slight convexity of the quadrangular cartilage. Electrolysis, 40 milliampères for eight minutes, when the larger part of the spur had assumed a mottled bluish and whitish aspect. The large slough separated in two weeks as a whole. This is the case referred to above, in which a small perforation ensued. The result was otherwise satisfactory.

Case 3.—Mr. A. G. M. The cartilaginous septum was deflected to the right and in addition, situated toward the base of the convexity was an excrescence which projected sufficiently forward to approach the partially collapsed ala and so close the nostril. Electrolysis was selected because of the nervous disposition of the patient, he having so little self-control that the surgical method might have involved unusual difficulties. Three treatments, fifteen to twenty-five milliampères each, for six minutes were given, special care being taken to avoid a perforation. By the removal thus of the excrescence, the deflection remaining, enough space was gained for comfortable respiration.

Case 4, Mr. M. H. B., and *Case 5*, Mr. W. M., present few features not already noted in connection with the others; in one somewhat advanced age, and in the other trial purposes only were the reasons for the selection of this method. The results were satisfactory in both.

TYPE II.—MIXED CARTILAGINOUS AND BONY SPURS.

Case 6.—Mr. L. C. C. This excrescence is of the kind which commences anteriorly and runs upward and backward, following the sutural line of the vomer and cartilaginous plate of the septum, gathering volume and thickness and terminating opposite the middle turbinal or pressing into the middle meatus, reaching quite across the nasal space. January 4 and January 11, electrolysis to the anterior and middle segments respectively by the bi-polar method, twenty to thirty milliampères, for seven minutes each. January 18, mono-polar method applied to the last and most prominent segment, a single steel needle being used for greater penetrating power, this part of the ridge being largely of bone and rather thin to accommodate double needles. The needle would not penetrate into the

[3] Transactions of Am. Laryn. Assoc., 1895, p. 54.
[4] Transactions Am. Laryn. Assoc., 1895, p. 56.
[5] The Journal of Laryngology and Rhinology.
[6] The Journal of Laryngology and Rhinology, January, 1895.
[7] THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Jan. 11, 1896.

depths of the ridge and consequently it was passed into its cartilaginous surface. This treatment was much more painful than the prevous bi-polar applications, ten to fifteen milliampères only being tolerated for ten minutes. The final result is satisfactory, the spur being much reduced in prominence, the reduction in volume being probably commensurate with the proportion of cartilage contained in it.

Case 7, Mr. M. J. H. and *Case 8*, Mr. W. G. H., had spurs similar in location and composition to the last described; in both of them the opportunity has been accorded to inspect the parts a year after the cessation of treatment and in both the degree of reduction of the spur and the amount of nasal space gained thereby was found to be greater than was anticipated. Evidently shrinkage continues until cicatrization is complete, for a period of several weeks at least.

Case 9.—Master G. P., a youth with a similar spur, received three treatments, bi-polar method. It would seem that young persons should be especially amenable to electrolysis on account of the softer state of the bone.

Case 10.—Mr. W. G. B. had had a spur removed by the surgical method some years ago; between the bulge which had redeveloped and the opposite inferior turbinal an adhesion had formed. This was divided and space gained by making a gutter-like excavation through the bulge by electrolysis.

Case 11.—Miss E. P. is a bleeder, at least I was once compelled to pack the naso-pharynx to check hemorrhage after a trifling operation for adenoids. Her spur of mixed cartilage and bone has been reduced, not wholly removed by electrolysis.

Case 12.—Master D. P., was a failure, because the patient fainted and was slightly convulsed. I purpose using the surgical method in his case.

Case 13.—D. C.; presented no noteworthy features beyond a fairly satisfactory result; and in one other (*Case 14*) of this type the treatment is not yet completed, but the indications point toward a partial reduction only.

TYPE III.—BONY SPURS.

Cases 15 and 16 have previously been reported in detail. They were large bony spurs of ivory-like hardness, into which needles could not be made to penetrate and upon which electrolysis made but slight impression. In all such I have since recommended the surgical method.

Conclusions.—There is little occasion to modify the opinion expressed in conclusion a year ago, that while effective in many instances, its scope of application should be limited in accordance with the following principles:

1. Strictly cartilaginous spurs can be thoroughly removed by electrolysis; one, two, or even three operative sittings being required. It is more tedious and less brilliant than the surgical method, but it is not accompanied by liability to hemorrhage. It is not to be indorsed as a universal substitute for the surgical method in even this limited class, but it is a serviceable measure for exceptional individuals of both this type and Type II, *e. g.: a.* For quite small spurs and thickened areas. *b.* For patients of delicate physique and those of highly sensitive or uncontrollable nervous organization. *c.* For "bleeders." *d.* For those who decline the surgical method.

2. As demonstrated by the cases reported under Type II, it will not thoroughly remove spurs which belong to that large class of mixed cartilaginous and bony substance; but it will reduce them in size. The majority of such cases would therefore better be treated surgically, as being the more thorough method; but instances will arise as above indicated in which the surgical method being inexpedient, benefit may accrue from the use of electrolysis.

3. As demonstrated by the cases reported under Type III, large spurs composed mostly of hard bone can not be successfully treated by electrolysis, for the reason that needles can not be caused to penetrate properly, and further, it is doubtful if the process is adequate, even if the needles should penetrate, to the resolution of hard and dense bone *en masse*.

4. Spur or excrescence, and not deviation of the septum, is the subject of this paper. Electrolysis is powerless to correct deviated septa of any form.

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DISCUSSION.

DR. JOHN O. ROE, Rochester, N. Y.—The point that Dr. Myles has made in regard to the ill-advised attempts frequently made to enlarge the vestibule of the nose by cutting out the interior of the passage, is well taken. This procedure invariably results in decreasing the size of the opening instead of enlarging it, for the reason that when a portion of the constriction is cut away, the circumference of the uncut portion is correspondingly lessened, and when the cut edges become coaptated during the process of healing, the lumen of the passage is made smaller. The vestibule of the nose may become narrowed by a variety of causes. In those cases in which it is obstructed by an exostosis which we frequently find in the floor of the vestibule, this exostosis should be removed subcutaneously in order to leave the mucous membrane uninjured, thereby avoiding the contraction of the passage. This is best done by making an incision in front of the eminence down to the bone and raising the mucous membrane together with the periosteum over the entire elevated portion of the exostosis. By cutting through these tissues on the posterior side they can be raised out of the way and the bony growth removed either by drill or saw. When this is completed, the mucous membrane of the periosteum can be replaced, leaving the passage of the nostril unobstructed. The vestibule of the nose is often also very much narrowed by the collapse or dropping inward of the alæ of the nose from a weakening or partial paresis of the dilator naris muscles, thus allowing the alæ to be drawn inward against the septum during inspiration, thus increasing the obstruction to ingress of air. I have removed this difficulty by making one or two incisions through the cartilage of the ala, and inserting a dressing into the nostril sufficiently large to distend the alæ quite widely until the cut made through the cartilage has become firmly healed and fixed in this position, thereby maintaining the nostril freely open and preventing the collapse of the alæ on inspiration. I was also much interested in Dr. Casselberry's paper on the reduction of spurs of the nasal septum by electrolysis, although I have never employed that method. I have not done so for the reason that I have always disposed of spurs and ridges of the nasal septum by what seems to me to be a very much easier and simpler method—by simply cutting the spur away. If the spur is located on the cartilaginous portion, I employ a suitable small cartilage knife for its removal, and if located on the osseous portion of the septum I remove it with a saw or the Curtis drill. I have not attempted the more complicated methods because my patients do not object to having these obstructions removed in this manner. In the case of removing a small enchondroma, it can be so easily and quickly done with the knife that if the parts are thoroughly anesthetized with cocain the patient is neither alarmed nor incommoded by the operation, and sometimes scarcely realizes that anything unusual is taking place. In regard to the danger of denuding the parts of mucous membrane, I have never experienced any difficulty in this respect after a cutting operation, if but a limited portion of the membrane is removed. Even in some cases where quite an extended area of mucous membrane is removed, I have observed it from day to day spread over the parts when maintained thoroughly aseptic, so that in a short time the site of the operation, from the loss of the mucous membrane, could not be perceived. After the use of the cautery, however, I have observed extensive scars and areas in which the mucous membrane had been replaced by fibrous tissue, thereby causing much annoyance from the dryness of the nose and the formation of scabs and crusts over the parts

in which there were no mucous glands to lubricate the part.

DR. MAX THORNER, Cincinnati, Ohio—I would like to refer to Dr. Myles' paper. The obstruction of the nasal vestibule is by all means the worst thing that can happen after operations. In the operation advocated by Dr. Myles I think we have means to prevent such occurrence. One case I had was that of a young man who had been kicked on his nose by a mule, and there was entire occlusion of the right nostril. I made the incision and occlusion followed, and it was as bad as before, if not worse. Later on I made a flap from the upper lip, turned it upward into the nose and sewed it to the inner surface of the ala nasi, after having loosened it from its adhesions. Then I packed the nostril with iodoform gauze. The result was not an ideal one, but the improvement was great and permanent.

In regard to Dr. Casselberry's method, I have used it in about eight or nine cases and my results and experience were about the same as his. I use it only in cases where the patients are timid and nervous. The current in Cincinnati is stated to be about 110 volts, but it varies from 108 to 115. I cut it down to eight volts, and use from three to six milliampères. The apparent difference in strength of current used by Dr. Casselberry and myself is that I use a different meter, one made by Hirschman of Berlin, which is extremely delicate and accurate. His whole apparatus is very reliable, no shocks of any kind are experienced by the patient, as the increase or decrease of strength of current is very gradual. A water rheostat is used. My experience as to results corresponds closely to that of Dr. Casselberry. Bony spurs are not at all affected by it; the best results are seen in soft cartilaginous excrescences. No pain is felt by the patients, although in one case, that of a very nervous woman, peculiar, dizzy sensations were complained of. Only the bi-polar method should be used.

DR. HANAU W. LOEB, St. Louis, Mo.—I was impressed with the statement of Dr. Myles in regard to maintaining an opening. I remember one case in which there was complete stenosis as a result of smallpox; there was complete adhesion of both edges to the septum. To maintain the opening I used two rubber tubes, which were made after the fashion of Simrock's spectrum. These were worn without discomfort for six months, later being worn only at night, and at present there is a complete opening.

DR. W. E. CASSELBERRY, Chicago—I tried to make it plain in my paper that it was not my custom to attempt to reduce all spurs of the nasal septum or even all cartilaginous spurs by the process of electrolysis; that I selected the cases for this method of treatment in accordance with the size, location and composition of the spur and somewhat in accordance with the degree or timidity or nervousness of the patient, some cases objecting or being unsuited to the surgical method. I was led to test electrolysis for two reasons: First, on account of previous disagreeable experience from hemorrhage by the surgical method even in trivial cases, and second, by the remarkable results that seemed to have been obtained by Moure and others by electrolysis. I examined it to find out what was in it, and I regard it as a useful addition to my resources for the treatment of this class of cases, but by no means worthy of exclusive reliance. Regarding secondary hemorrhage, of course, it is possible, but I have not met with it. Electrolysis should not be confused with galvano-cautery; they have nothing to do with each other and I do not use them for the same purposes.

To Check a Sneeze or a Cough.—Dr. Brown-Sequard, in one of his lectures, said: "Sneezing can be stopped by pressing on the nerve of the lips near the nose. Pressing on the top of the mouth very hard is also a means of stopping coughing, and many say the will alone has immense power."—*Pop. Science News*, August.

NEW MEXICO AS A HEALTH RESORT.

Read in the Section on State Medicine, at the Forty-seventh Annual Meeting of the American Medical Association at Atlanta, Ga., May 5-8, 1896.

GEO. M. KELLOGG, A.M., M.D.
CHICAGO, ILL.

The Rocky Mountain region, especially the mountains and the upland plains of New Mexico, is a land lifted up by nature into the pure serene for the general invigoration of the race. New Mexico belonging to the Rocky Mountain crest, its eastern slope and a larger portion of Arizona belonging to their western slope, has perhaps, the most equable climate known. There are no extremes of winter cold or of summer heat; while there is a notable absence of dampness in air and earth. Little moisture is left for this region after the hot winds of the Southern Pacific are wrung dry by the coast ranges. The elevation of this country from four to eight thousand feet is just sufficient to prevent that oppressiveness of summer heat which otherwise would be severely felt in these latitudes from 32 to 37 degrees north. The winter months throughout this region owing to the ever present sunshine, and the positive shelter of the mountains, afford the most satisfactory retreats for invalids.

The purity of the air is shown by the absence of atmospheric dust and disease germs. Its notable clearness over the plains has been remarked for many years. Objects are clearly seen at great distances which in ordinary atmospheres would be hidden by fog and dust. The sun is visible nearly every day of the year and often for months without a cloud-fleck to obscure its radiance. The sun's heat is really grateful instead of oppressive. The native when enfeebled by illness or age basks in the sun. It is the best medicine that he knows. It renews his youth by renewing life at its springs. The invalid or valetudinarian feels at once the mild stimulus. Simply to breathe the air seems a luxury and a delight.

A noted peculiarity of this upland country is the coolness of the nights, even in the extreme of summer. The earth heated by the sunshine freely radiates its surplus at night, there being no blanketing clouds to intercept or confine. Uninterrupted and balmiest sleep is thus insured, bringing healing on its wings, while the absence of insects to torture is an additional security. It is certain, that change of climate as a curative measure, promising though it be, requires means in abundance to secure its best results. But, as though nature were willing to bestow her best resources, on the poor as well as the rich, the benefit of this climate is open to all at a minimum of cost. The least expensive structures afford ample security and shelter at all seasons. Nourishing food can be obtained on an average at its cost at our great population centers. Fuel too, cheap and abundant, is largely unnecessary where the sun's largess is so ever present and grateful. Not to mention the beautiful and abundant building stone, the Mexican adobe houses are delightfully cool in summer and warm in winter. These can be made with materials at hand, or by larger outlays, can be constructed as luxurious as could be wished. Along the leading routes of travel such might be conveniently located and nowhere be more than an hour from skilled physicians and needed supplies. While the elevations of New Mexico from four to eight thousand feet all possess the same general climatic features, each altitude has some especially desirable quality. The plains are more uniformly dry and

their winters are less vigorous than in or near the mountains. In all these sections the atmosphere has the same characteristic clearness save for occasional dust storms. The mountains catch the greater part of the rain and snow, and furnish the chief water courses and supplies for irrigation, etc. The summer rains from July 15 to September are chiefly seen in the mountains and are usually transient. In the plains they are much less frequent and there is an almost entire absence of dew. Nature as though to confound the wise, shows vegetable life in hundreds of native species flourishing in the plains with wonderful healthfulness, unvisited by mold fungus and vermin so inimical to plant life in damp regions. The cryptogamous plant world which elsewhere sends its spores and disease producing germs across the world is almost unrepresented in the mountains and plains. Fungi, mosses, ferns, lichens and liverworts, which thrive so signally in the damp and dark, find small encouragement in the sunshine State. The experiments of Tyndall to demonstrate the purity of the atmosphere in Alpine glaciers can be repeated most satisfactorily in the plains and foothills of the Rocky Mountains at an elevation of from four to six thousand feet. At such elevations in the plains putrescence is almost impossible. The ordinary ranchman knows he can, with impunity, hang his venison or beef under a tree or shed for weeks even in the summer. The manifold vermin of the infusiorial and insect world are not tempted to climb or fly to this region from their eastern homes.

Most men believe that in the general upbuilding and economy of the earth "some steadfast purpose runs."

Have not these mountains been pushed up in accordance with a plan which involves the general good of the race. The genius of modern civilization may be maritime, but that of the most ancient periods certainly was not. The early home of the Caucasian race was in the uplands of Asia. The shepherds on the oriental mountains studied and named the stars ages before the first frail shallop was launched from the shore. The early Phœnician navigator had learned elsewhere to trust the stars before he ventured his fortunes upon the waves. The Aztic and Peruvian civilizations originated in the mountains and upland plains of the western continent. It may well be that those influences which led them to cultivate religion, art and science in the early periods still remain as a heritage to future mountain dwellers. History in certain broad senses repeats itself. It is at least certain that nature has upreared these mountains in order to diversify the conditions of mankind to vary their industries, their resources and character. The physical well-being of the race as well as its moral and intellectual nature, may here again find its highest expression. It is certainly possible for such as can not have the privilege in crowded and stifled cities to live clean and healthful lives in our mountains. Even in the most prolonged summer heats sunstroke is unknown in New Mexico. Diseases associated with malaria are excessively rare. Acute rheumatism, pleursy and pneumonia seem only incident to special and unnecessary exposures to cold night air and subterranean damps peculiar to a miner's and cow-boy's life.

The diseases for which the mountain climate may be claimed as a prophylactic are first, those deadly diseases of infancy, summer complaint and cholera infantum. Abdominal disorders are rare. Typhoid fevers are but feebly represented by the dreaded "mountain fever," which is neither so deadly or common as those dreaded diseases are in the East. There are some neuroses like chorea which seem to be aggravated in this country.

I have observed among native New Mexicans that heart disease, functional or organic, does not seem in any respect more common than in the Mississippi Valley and pursue much the same course. Pure neuralgias seem positively benefited by this climate. Tuberculous, bronchial consumption, and asthma are most uncommon among the native population. Invalids with lung disease seem often greatly relieved and cured by simple residence. But, where the lungs are riddled by disease and tied down by adhesions, the very rarity of air becomes a great disadvantage. Such cases are the great opprobrium of traveling patients who succumb to the inevitable "heart failure" of which so very many die before they reach a secure haven. The striking feature of the mountain country is the diathermancy of the air. Less heat is absorbed by the atmosphere than in lowlands. This obviates in great measure the oppressiveness of the air. Moreover, there is on this account an immediate and gerat difference between temperatures in the sunshine and in the shade. This difference has been calculated as equal to 1 degree F. for every 230 feet vertical ascent. This gives for elevations of 6,000 feet above 20 degrees F. difference. But the effect of sunshine in the absence of aqueous vapor in overcoming its direct depressing influence is something for which there is no accurate measure. Perhaps there is at the crest of the continent an electric or other earth aura which ameliorates the sunshine and causes it to quicken the pulses of life.

Statistics have proved that the West Indian islands and the Gulf States are unfavorable for most lung diseases and rheumatic fevers as well as abdominal disorders, generally, being hot beds of malaria. The same is true of the climate of India. The boasted climate of Nice and Mentone save for a short period of the year is found a signal failure. This is true of all the islands of the Mediterranean. Except the parched land of Egypt, no region has been admitted by English authorities as especially favorable for lung trouble. Egypt, however, is the home of the plague, cholera, of abdominal disease, and ophthalmia and a thousand discomforts. Great Britain in her ambition to possess the world has accomplished one important matter at least, though with great expense of life and treasure. She has tested many climates by means of her army. Her health and death rolls have established the extreme unhealthfulness of Gibraltar, the islands or shores of the Mediterranean, of the Black Sea, of India, China, the valley of the Nile, the West Indies and Central America and Demarara. Canada and Australia and her own foggy shores have given the best returns for salubrity as shown by England's army reports—a sad record at best. The Kerghees steppes near the Caspian, though below the sea level, owing to its dry air has been observed like the valley of the Nile favorable for tuberculous disease. In the elevated plain of Persia and Armenia, at elevations of about six thousand feet, phthisis is much benefited.

In the Alps at St. Moritz, on the river Inn in the valley of the upper Engadine are spas and winter cures where some happy results are experienced, despite harsh air and inclemency.

The elevated plains of Anahuac in Mexico have borne for several centuries a reputation for salubrity. The plain of Quito directly under the equator, at an elevation of nearly nine thousand feet, has a well established claim for general healthfulness, as also have Montana, Potosi and still greater elevations. New Mexico, with its clear dry air, affords a great contrast to many mountain regions, in particular to the Alps. These, placed between near and sharply contrasted seas—the superheated Mediterranean, the fierce, cold Baltic and the storm swept Atlantic have ever been the cradle of climatic excess. The mountain tops are eternally capped with snow and glaciers; their valleys are the hot beds of miasm and dampness, where consumption and cretinism prevail. The cold sides of the Alps are to-day, however, lined with hotels and *pensions* for invalids, who try to imagine themselves benefited by gazing on ice-clad peaks and mountain torrents. There is this to proclaim, and it is of higher importance than the story of matchless fertility, or of hills seamed through with the precious metals. In the Rocky mountains there is an area of 1,000 by 300 miles with a climate the most serene and invigorating of all that have been tested or in any proper manner demonstrated.

ALCOHOL OR NO ALCOHOL IN THE TREATMENT OF TYPHOID FEVER.

Read in the Section on State Medicine, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

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There is no disease in the entire catalogue of human ailments that is of more concern to both the physician and the patient than that of typhoid fever. It attacks the young, the old, the rich, the poor, the high, the low, the monarch and the slave, and while the disease has a special fondness for certain ages and conditions yet none are exempt even after having once had an attack.

It is found on the mountain top and in the valley, and an epidemic may begin on the mountain top and spend its force in the valley as was the case in the noted "Plymouth epidemic." It is both epidemic and endemic, and no physician who engages in the general practice of medicine will continue long ere he comes face to face with this dreaded destroyer of family ties and human comfort.

The diagnosis and symptoms of the disease have been studied and discussed since the dawning of the present century. Since the year 1813 it has been recognized as a distinct ailment, and in the year 1829 Louis gave it a name, but even then it was supposed, as its name indicates, to be a milder form of typhus; and not until nearly twenty years later was a differential diagnosis made; finally, in the year 1880 the bacillus typhosus was discovered and since that time we have been trying to obtain a remedy or plan of treatment that will destroy the germ without destroying the host. As to the medical treatment of the disease you will no doubt hear enough before this meeting closes to convince you that it is still unsettled and as to whether it can be aborted or not I leave for others to discuss, especially those who are engaged in this line of work. But there is another side of this question, and that is the sustaining of the vital forces while the disease is in progress.

It is the steering of the ship through the storm that marks the successful mariner. The successful guide is he who avoids all dangerous routes. Likewise the practitioner is judged by the result of his work; his rate of mortality is what marks the successful physician and especially is this true in the treatment of typhoid fever. We believe sustaining the vitality of the patient is of as much importance as the medical treatment of the pathologic conditions present; also that any agent which contributes to this end is a great aid in the successful management of a case.

What influence does alcohol have in thus sustaining the vital forces of the patient through this trying ordeal? Let us first refer to some of our authors and notice briefly their teachings on this subject. Von Ziemssen, in an article which appeared in the ASSOCIATION JOURNAL of 1887, closes by saying, "It is better to give too much alcohol than too little." Another able writer in the *Medical Press and Circular* of 1887 says: "A very important point in the treatment of typhoid fever consists in the administration of alcohol. When we have a long continued febrile process it is requisite and necessary to give wine in all cases, without exceptions, from the first." The same author tells of the enormous amount that may be taken even by those who are not accustomed to its use. Another writer of the same year says, "In the treatment of typhoid in children, for food, give bouillon, barley water, lemonade and milk, and if there is much prostration alcohol and extract of bark."

These are only a few quotations showing the teachings of the last decade and we will hastily pass to the instruction given in our latest text-books.

Dr. Osler, in his first edition, 1892, says: "Alcohol is not necessary in all cases, but may be given when the weakness is marked, the fever high and the pulse failing." In his latest edition, 1895, the same language is used, showing no change in the author's opinion, or an oversight in revision.

Professor Whitaker, in his "Practice," tells us that "alcohol is the best whip for a flagging heart, in a mild case in the form of wine, in a severe case in the form of whisky and in the most protracted cases the alcohol should be given in the form of brandy." He also says: "A threatened collapse may be bridged over by a cup of black coffee with a teaspoonful of cognac," and closes the paragraph by informing us that nitroglycerin, 1-100 in doses of 3 drops in whisky is one of the most powerful agents we possess.

Bartholow, in the last edition of his "Materia Medica and Therapeutics," after discussing the subject of alcohol at some length, closes by saying: "The chief utility of alcohol in these diseases [referring to fevers and other depressing maladies] is not as a stimulant but as a food. It furnishes material, easily oxidizable, which can be applied as nervous, muscular and gland force," and then says, "it should be given with milk, eggs, broth and other suitable aliment." The same author says that the action of alcohol on the nervous system is that of a narcotic.

With such indefinite statements as to the action and use of so potent an agent as alcohol on the system is it any surprise that the mortality runs from 10 to 30 per cent? In reference to the medical properties of alcohol there is a difference of opinion. It may be germicidal, but this property can not be utilized in the treatment of typhoid fever. So we come at once to the question of greatest importance. Is alcohol a food and does it assist in tiding the patient over a crisis.

A food as defined by Dr. Chapman in his "Physiology," is any substance, inorganic or organic, solid or liquid, that will nourish the body and renew the material destroyed in producing the phenomena of life. The same author says that alcohol can be of no benefit to the system, for it is found as such in the organs untransformed or is excreted unchanged; hence, it can not supply any want by simply passing through the system and if it is burned up it must interfere with the oxidization of other substances, such as fat, etc. He further states that alcohol diminishes the amount of urea excreted and the action of the skin, interfering with natural combustion, thus preventing the whole nutrition of the body; and then closes by stating that as a medicine it is indispensable. This alcohol is a peculiar drug; it has been found in the brain unchanged, excreted likewise, yet as a medicine is indispensable. What medical property has it that can be made use of with benefit to the patient of typhoid fever?

Methinks I hear some one answer, "a food to nourish the patient;" another, "antipyretic to reduce the fever;" and still another, "a stimulant to tide over the crisis, to whip the lagging heart." Does it rest or strengthen a tired horse to whip him into a trot? Alcohol has a paralyzing influence and all the effects of its use, which seem to be the result of stimulation, can be shown to be those of paralysis. The first effect of alcohol on the brain is that of paralysis and affects the faculty of reason, and as Bunge says, "the emotional life is brought into free play unhampered by the guiding strings of reason." The same author states that another paralytic symptom which is erroneously regarded as one of stimulation is found in the deadening of the sense of fatigue.

Dr. Kellogg, in an excellent paper published in the December *Bulletin*, after reviewing the physiologic relations of alcohol as set forth by Professor Bunge, closes with the following language: "In view of such testimony as this how is it possible for anyone still to maintain the old error born of the ignorant and pernicious idea that alcohol is a food, a tonic, a stimulant, a rejuvenant and a conservator of energy. It would seem to be time that physicians were considering this question of the medical use of alcohol seriously and conforming their practice to the facts of science instead of the traditions of our medical forefathers and the formulas of obsolete text-books."

How is it to-day with the young doctor as he leaves his alma mater, his diploma under his arm? Among many other delusions and theories that fill his mind is one that alcohol is useful in all diseases and conditions, from the bite of the poisonous snake to puerperal hemorrhage. In one pocket he carries a dose book containing a list of poisons and their antidotes, and perchance a copy of the code of ethics. In the other his medicine case filled with tablets and triturates of all kinds, from nitroglycerin to sulphate magnesia. I have wondered why some enterprising drug company did not make tablets of alcohol. How convenient they would be. Thus armed, the young disciple of Esculapius goes to the field of battle. It is not long till this young soldier comes in contact with a case of typhoid fever. The symptoms are not just like those described in the books or heard in the lecture room, but while he is waiting for something to happen the patient passes into the second week of the disease. By this time the symptoms are more marked and by exclusion a diagnosis is made and time is hastening us into the third week, which is one of debility and depression, and the first thing thought of is alcohol, which is given freely. If it is well mixed or alternated with suitable nourishment the case may terminate favorably; if not the alcohol only hastens the end.

We believe the mortality from typhoid fever has been gradually lowering, and no doubt is due in a great measure to the non-use of alcohol in the treatment of the disease. There is hardly a week passes that some of our journals do not report a series of cases treated without the aid of alcohol in any form. I used alcohol in the treatment of the disease until two years ago, when I became alarmed at the mortality, so I changed my plan and in 1894 I treated thirty-seven well-marked cases of varying degrees of intensity. I had two fatal cases, and in both of them I had used alcohol. In 1895 I treated thirty cases of about the same type with no death. I only used alcohol in one of them and it caused me more trouble than any of the others. As this case was in the family of a saloon-keeper I could not control the matter, and they would give it during my absence. On my return I would find the face flushed, the temperature high, the pulse rapid and the patient nervous. By close inquiry I would find that some of the family had given just a little good whisky, which had been in the house for twenty years.

In closing, I wish to state I am well convinced that in the treatment of typhoid fever our patients will do better and stand a better chance of recovery if we abstain entirely from the use of alcohol in the treatment of the disease.

DISCUSSION.

Dr. J. N. Quimby—It can not be said that the author of this paper is at all prejudiced. He has tried the alcoholic treatment thoroughly. I have also tried the use of it. I grew up at a time when it was regarded as a panacea for all the ills that flesh was heir to. It was a food, a stimulant and a nerve supporter. It was just after the attention of the world was drawn to Liebig, who made the fatal mistake of thinking that because it had a certain amount of carbon it supplied what was needed in the body, when, in fact, it is no carbon. We started with the mistaken idea that alcohol was a stimulant and supported the body; that it would act as a powerful nutrient to the blood, but that it must not act as an anesthetic. It is impossible for anything to act as food when it acts as a narcotic. We have been using it because our forefathers recommended it. We did not take the trouble to analyze and see what it was. A valuable example is that of the soldier (Martin) wounded in the abdomen, the wound healed but the aperture remained open. Through this a physician was able to study the process of digestion. Whenever he used alcohol in any form it always interfered with digestion. There are the practical tests of Summerville, Richardson and thousands of others that have been made, and notwithstanding that fact, the majority of the medical profession continue to use alcohol as though it was food, stimulant and supporter of the basal nerves, when, in fact, those who have paid attention to the matter have concluded that it is neither one or the other, and yet, if you give a small dose it interferes with digestion, because it precipitates the pepsin of the gastric, and anything that does that is not a supporter. For the last twenty years I have not used a drop of alcohol. Give a certain amount of nourishment but do not destroy that with alcohol. In my cases there is generally a higher rate of cures than of those who use alcohol. I was once called in consultation over a very old gentleman, to whom the physician was giving alcohol,

a glass of champagne and one ounce of brandy. I decided that he had an uncertain pulse. It seemed to have a better volume, and I took into consideration that he was soothed with alcohol. You know 5 per cent. is a large portion. It is dangerous to introduce 10 per cent. Notwithstanding all the stimulants the patient died. I believe he died from alcoholism rather than typhoid fever. I give this as an example where we are making a grave mistake in using alcohol, because we know it is a narcotic, it paralyzes the mind and muscles. To administer it as a heart tonic will do more harm than good, because it is not a heart tonic but a narcotic.

DR. MCDANIEL of Alabama—I have some knowledge of this subject of alcohol, as we all have of every remedy we use. A man of my years has frequently heard these conflicting views and has witnessed the results as claimed of the different remedies. I do not wish to controvert nor yet to advocate what has been said here on the subject; my object is to enter a protest against extremism. I look upon alcohol as an anesthetic, and I believe is a fertilizer of the basal nerves. Illustration is one of the most powerful arguments brought into discussion. We are asked, what effect does alcohol have upon the vital actions and the functions of the body in health or disease? Suppose I take a small alcohol lamp and put a match to the wick. The first thing I know the alcohol is burned up. There has been some heat generated when the alcohol was burning and when the small wick was burning out. If we give alcohol to the patient it comes up to the capillaries of the lungs, which we call the wick of the human lamp. It keeps up the temperature of the failing, feeble patient. If he is disposed to get cold, if he verges beyond the stage which you describe, I think you have witnessed that this supplementary food was of some use. I don't believe we understand theories fundamentally enough to base an exclusive dogma on the action of experiments; but when I see the results on patients in typhoid fever I know something about the action of alcohol. I was once extremely prostrated with typhoid fever. A friend gave me sweetened water with cognac brandy and nutmeg grated over it. My nerves were all unstrung and I was tossing from side to side; but in fifteen minutes my nerves were quiet and easy. I have tried stimulants hundreds of times in that nervous condition of the system, and I know no other nerve tonic which can equal it. It will produce perspiration in a dry, raspy skin, and will produce sleep where there is insomnia. I know that alcohol does good sometimes. There are two sides to this question and we should not go to either extreme. Let us say it does have an important function. If you experiment upon yourself and are benefited by the use of alcohol, it is the alcohol which makes you feel so much better.

DR. QUIMBY—I admit there is always apparently some benefit to be derived, but the point is, if alcohol has done so much good, which we admit to a certain extent, if it has saved one life, for that life it has saved I can cite over one hundred which it has destroyed. Therefore it can be treated on the practical point that there can not be found a case where alcohol will do for which other remedies may not be substituted that will do better. You hesitate about giving opium for fear of the danger that will result from the appetite created for it, and yet you prescribe alcohol. When you look over this broad land and see how many homes are beggared, how many graves filled from want, destruction and disease, and realize that this is done by the use of alcohol to a very large extent, I say if we possibly can avoid it, let us do so. There is much to be learned in reference to alcohol. It is not only injurious, but creates comment among the laity regarding the medical profession; then, too, there is the condition which the poisonous element of alcohol leaves one in. We have a double poison, that of alcohol and by urea. It prevents the destruction of tissue which ought to come out of the body. If not cleared of the poison that the system secretes daily, you are sure to suffer from the effects of it. We have also much to learn in reference to the modus operandi of alcohol. It creates within the body an irregular form of appetite and habit. For these and countless other reasons we should make use of the many remedies which can accomplish all and more than the good resulting from the use of alcohol without its baleful effects.

DR. HIBBERD—It has been stated that a stimulant was one which was founded on nutrition. Is that true? Is not a stimulant something which renews strength in the tired organs and alcohol that which spurs them on to renewed activity? Depression comes simply because the active agents have been overtaxed; but there is that corresponding rest in depression until it shall recover the average strength. I think this definition of a stimulant is incorrect.

DR. KOBER—It seems to me the Doctor's statement is somewhat misleading as to the effects of alcohol on the system. It is very difficult to understand that alcohol produces a paralyzing effect upon the heart muscle, when we all have seen the stimulating effects of a greater or less quantity of alcohol. The statement was made that it interferes very seriously with urea elimination. This may be the case in advanced stages of Bright's disease, but is certainly not the usual effect of alcohol. It has a stimulating effect on the kidneys. In regard to the particular effect of alcohol, the Doctor made a statement that whenever 10 per cent. of alcohol was taken in the blood it would prove destructive. That may be so, but I am inclined to think that he is confused in his ideas in regard to the operations that are going on in the stomach.

DR. COCHRAN—I am only going to express my gratification that alcohol has found some friends in this section of the AMERICAN MEDICAL ASSOCIATION. I think all of those books are unscientific and based upon indirect information. I recognize fully the value of alcohol. I can say it has been a blessing to the human race and so far as I am concerned, am sure that I would not be alive but for it. We should not allow personal prejudice too much latitude. As to killing people, I suppose it does; but how much time and alcohol does it require? As to destruction of property, it probably makes some people poor, but that is caused by abuse and not the use of alcohol. To combat that theory is the apparent benefit with which it is almost universally used. The most prominent, the wealthiest and most successful men use alcohol apparently with good results. When General Booth made the celebrated investigation into the causes of pauperism in East London, which cost many thousands of dollars and filled two or three volumes, he found that only 13 per cent. of the pauperism of East London was traceable to inebriety. There are many things connected with alcohol in the system that we do not know. I feel that the fact that it has always been used is a sufficient reason for its having some valuable qualities.

DR. GARBER—I do not wish the Society to understand that I am an extremist on this question, I simply wish to learn, and have been much benefited by the suggestions; there are a few things which have been said that I think should be referred to. In fact, some have drifted away from the subject and discussed the question from the moral standpoint. I did not refer to that in the paper. I believe that the trouble originates greatly from the teachings of the text-books. They teach that it is necessary in all of these cases. One brother has spoken of it saving his life in typhoid fever. I think under the same conditions hot water with some ordinary stimulant would have had the same result. The last gentleman on the floor has made the statement that most of the successful men have been in the habit of drinking. I would refer to Rockefeller, and Daniel of Ohio, as well as many others who are strictly temperate and yet have attained great success and achieved some prominence. He also spoke of the pauperism of East London. I have been connected with the Ohio Peniten-

tiary in an official capacity and the result of my observation is that 70 per cent. of 1,940 convicts come there directly or indirectly from the use of alcohol. I mention that as regarding the moral side of the question which I have heretofore avoided discussing. One gentleman used the burning of an alcohol lamp as an illustration; on the same principle why not use gasolin or make a decoction of coal products and other things we use outside of the body, for oxidization. I do not believe alcohol can be oxidized in the system. It can be burned outside. We would not think of inhaling natural gas because we use it for illuminating purposes. A few inhalations would satisfy us, I think. I have followed it with much interest, but I yet believe it is a bad thing to use alcohol in the treatment of typhoid fever.

TRANSFUSION, INFUSION AND ANTO-TRANSFUSION; THEIR COMPARATIVE MERITS AND INDICATIONS.

Read before the Kentucky State Medical Society.

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Whenever a number of measures of a more or less varied and changeable character are advanced for the fulfillment of a long existing demand, it means an absence of unity in the selection of the proper measure and a general distrust in a satisfactory adjustment of the demand. This is clearly illustrated by the number of procedures that from time to time have been recommended to overcome the depressing and even fatal condition following enormous hemorrhages.

The fact that the operation of transfusion is but rarely performed at the present time, and that of infusion faring but little better, tempted me to refreshen the subject somewhat more than a month ago before one of our local societies. Since that time I have been impressed more than ever with the neglect to which these operations have been subjected and the importance of bringing them before the eyes of those engaged in operative work.

I may be pardoned for borrowing from my former paper the historic outlines in connection with the development of these minor operative procedures.

The first intimation of transfusion can be found in the 333d and 334th verses of the seventh book of Ovid's Metamorphoses, "Veteremque haurite cruorem Ut repleam vacuas juvenili sanguine venas." This carries us back to the time of Christ, and from then down to the present period; "a long but unbroken chain can be traced running through the Hebraic and Egyptian medical records." In 1492, or more than a hundred years before the circulation was understood, Pope Innocent VIII. was struggling with his last illness. He was attended by a Jewish physician who, it is supposed, was prompted by the idea noted in the verses of Ovid and performed transfusion with the blood taken from three Roman youths. In 1615 Andreas Libavious, of Halle, wrote an article upon a charlatan who is supposed to have performed transfusion. In 1628 another appeared under the authorship of Johann Colle; coupled with these came the discovery of the circulation by Harvey, which was directly responsible for the vigorous attention which the learned men at that time gave to the subject.

In 1652 an apparatus for arterio-venous transfusion was contrived by Folli, of Italy. In 1666, Richard Lower drained a good sized dog by tapping the jugular vein. When the animal was exhausted he filled the vessels with blood drawn from a cervical artery of a second dog until the animal had recovered; he then drained the same animal a second time and again filled his arterial system with blood from a third dog, thus completely changing the blood twice in the same animal without any unfavorable consequences. This represents the first well-authenticated experimental maneuver made in the direction of transfusion.

This aroused an interest in the Royal Philosophical Society, and it was then believed that a remedy had been discovered which was not only capable of curing disease but by means of which the aged could be transformed to the youthful and the immoral could be changed to the moral. So strong was the belief in the latter, that a trial was actually undertaken by Lower and King.

At that time a religious fanatic by the name of Arthur Boga, 30 years old, offered himself in consideration of a guinea as willing to undergo the experiment, which was conducted, in the presence of the Bishop of Salisbury and a large and brilliant audience, by Lower and King. Six to seven ounces were withdrawn and ten ounces of arterial blood from a sheep was injected. This operation was again successfully performed on the twelfth of December of the same year by the same operators.

It must be noted, however, that these experiments were preceded by others performed by Jean Dennis and Emmerez in Paris in the year of 1667, and to whom the honor of the first successful transfusion in a human subject is due. Dennis employed the blood of a lamb, and several times repeated the operation upon several different subjects with almost uniform success, so far as the transfusion was concerned. These operations aroused a vigorous and jealous opposition in Germany, France and Italy, and were partly terminated when Dennis narrowly escaped a trap that had been set for him, but notwithstanding his innocence, it had involved him in a criminal case.

From this time enthusiasm began to lag and matters continued with a varied interest until 1818, when James Blundell, the obstetrician, placed transfusion upon a scientific basis, at the same time giving a method for its correct performance. To Blundell is likewise due the honor of first employing human blood instead of that of lower animals for the transfusion. With this the history of transfusion can be dismissed. In parting we might add that there are but few procedures known to medicine whose histories are more replete with incidents that are as varied, interesting, pathetic and amusing as the history of transfusion.

Before entering upon the subject of transfusion, it is well to glance at the conditions which are produced by the loss of large quantities of blood.

In dangerous hemorrhages death may ensue from one of two causes, i. e., either from the absolute loss of blood itself or from a fatal reduction of the intravascular pressure. In the first instance, the amount of blood is insufficient to meet the demands necessary for the sustenance of life. This makes the case unmistakably clear, and the indications are more blood, or death must ensue. In these cases nothing short of transfusion will fulfill the requirement; fortunately, however, these constitute the minority. In the majority of cases the death following hemorrhage is not due to the direct loss of blood itself, but rather to a disturbance in the mechanism of the cir-

culation. Let us glance at the physiology of the circulation.

Two factors must be considered: First and foremost, the force of the heart, and second, the elasticity and contractibility of the arteries. If the heart has an insufficient volume of blood, or perhaps more properly speaking, volume of fluid, for blood is not absolutely necessary for this feature, there is an irregularity in its contractions and a serious crippling in the proper working of its valves, and in consequence we have a condition at once produced which for the time being, can be compared to the worst variety of valve lesion, so that the heart not only fails in sending out the required amount for nutrition, but also for the closure of the valves. Aside from this, the amount of blood sent out is not sufficient to produce the necessary dilatation by means of which the elastic nature of the large arteries are enabled to propel the force of the heart to the more distant parts of the body.

When this state of affairs exists, the indication for an increase of the intravascular pressure is equally plain and the requirement then is more fluid; whether that be blood or salt solution is immaterial.

TRANSFUSION.

By transfusion we mean the injection of the blood of one individual into the vessels of another. Although this operation has been variously designated by different writers as both safe and unsafe, there can be no doubt that in the hands of a careful operator, all possible elements of danger can readily be eliminated.

Indications.—From the history of transfusion it is apparent that formerly its range of application was far more extensive than its merits justified, and in view of this state of affairs the disappointments naturally were quite frequent. This largely aided in relegating it to the disuse to which it was subjected. At present any factor may serve as an indication for transfusion, which reduces the quantity of the blood so that the remaining volume is unable either by reason of the reduction, or incapable by reason of any alteration to which it may have been subjected, to carry on the functions necessary for the sustenance of life. The principal conditions which such a statement would comprise, would be either an acute anemia, dependent upon an extensive hemorrhage, or a paralyzation of the oxygen carrying power of the red corpuscles, carbonic oxid, or other similarly toxic gases. We would still scarcely regard such conditions as morphin or atropin poisoning, leukemia, chlorosis and a host of other pathologic states as justifiable indications for the employment of transfusion.

Modus operandi.—There are a few practical features in connection with the operation of transfusion which deserves special attention. During the cholera epidemic of 1866, Von Graefe raised the question as to whether the centrifugal should be given the preference over the centripetal method? Whether it would be better to inject the blood into the arteries rather than into the veins? The advantage urged in support of the centrifugal method was that since the capillaries intervened between the arteries and veins, the blood in its passage through the capillaries was subjected, as it were, to the influence of a strainer which safely withheld any air or emboli which might be present in the transfused blood. The arteries which were employed were either the radial, tibial or even perhaps the brachial. Although this method has the endorsement of Billroth, Landois, Heuter and others, it has likewise many very able opponents who have pointed to the force necessary for the centrifugal method which not infrequently resulted in a rupture of the capillaries with accompanying gangrenous conditions.

Another question to be decided is whether or not the blood should be defibrinated and whether we should select the venous or the arterial blood? Referring to the former of these two questions, we are safe to say that the verdict is almost unanimously in favor of the defibrinated blood. It has been said that the integrity of the corpuscle is considerably affected by the defibrination of the blood, but this is somewhat problematic. However, the dangers of a partial or an entire coagulation which attended the use of non-defibrinated blood, fully justifies the defibrination.

As to the second question, there are reasons why the venous blood is to be preferred to the arterial, namely, the veins are more accessible than the arteries. The tapping of a vein is simpler and is attended with less subsequent dangers than accompanies the opening of an artery, besides the blood, although venous in character, rapidly becomes arterialized during the act of defibrination. In addition to these we might ask, should the transfusion be direct or indirect, i. e., should the blood pass directly from the vessels of the donor into the vessels of the receiver without any exposure to air? To this we are inclined to say that we believe it to be far safer to employ the indirect method.

The extreme tendency on the part of the blood to coagulation, and the grave result which attends the introduction of even a minute embolus, not to speak of the chances of the introduction of air, even at the hands of a careful operator, makes us unhesitatingly declare in favor of the indirect method.

Should the transfusion be undertaken for the relief of a poisoned condition of the blood, such as results from the exposure to carbonic oxid gas, the individual should be subjected to venesection before the transfusion is undertaken. In the performance of the operation no elaborate outlay of instruments is necessary. Two or three bowls, a reversible aspirator, a glass rod and a scalpel, all of which being in a perfectly aseptic state, will fill the requirements. Everything in connection with the operation must not only be perfectly aseptic but must be heated to 105 or 110 degrees F. When all is in readiness, the blood is withdrawn from the arms of one or two donors into one of the aseptic bowls, the amount varying from five to fifteen ounces, according to the circumstances of the case. It is rapidly defibrinated by whipping it with a glass rod and then straining through a piece of sterile gauze into an aseptic bowl. This whipping may be carried out for a minute and a half before straining, but still better is to whip for a minute and strain whipping, whipping it a second time and again straining through a fresh piece of gauze. The actual operation must be performed within two or three minutes, and the greatest care must be exercised that all of the air has been forced out of the syringe and tube before the injection is commenced.

Dangers of transfusion.—The possible dangers that may attend the operation of transfusion are: Phlebitis, sepsis, embolus and the introduction of air into the veins; all of these can be readily eliminated if the operator exercises care in the transfusion.

INFUSION.

By infusion we understand the introduction of non-sanguineous fluids into the circulation. Although the popularity of this measure is but of recent date its real history, however, can be traced as far back as the year 1677, when Johannes de Muralto of Zurich practiced the injection of milk into the vessels of one of the lower animals. The term infusion, however, as applied to-day carries with it the idea of a salt solution having the same strength as the serum of the blood. The advantages of this operation over that of transfusion are manifold, especially since death, in the majority of instances, is not due as much to the insufficiency of the remaining quantity of blood as it is to a disturbance of the mechanism of the circulation. By the use of the salt solution the dangers common to transfusion are all minimized and especially the dangers from emboli are entirely absent. This widens the field of its usefulness so that the indications for its use are not wholly confined to conditions following alarming hemorrhages, but include any pathologic state attended with a feeble pulse which is dependent upon a diminution of the intravascular pressure which makes it one of our most valuable measures for combating profound shock.

This property of restoring the tone of the circulation in a condition of shock is not entirely due to the increased intravascular pressure, but also due to the stimulating influence which the salt solution has upon the heart. This fact, however, has not received the recognition which it deserved, for it has been but a little more than a decade since it has practically received any attention.

In the year 1881, transfusion lost most of its esteem as a life saving measure in alarming hemorrhages. At this time E. Schwartz published his paper, "Ueber den Werth der Infusion Alkalischer Kochsalz Losung in das Gefass System bei Acutes Anemie." From this time the adherents to transfusion have been abandoning it in favor of infusion, not that the latter can ever completely replace the former in every case, but because it can successfully replace transfusion in most cases, and where such is possible it is always given the preference, owing to its greater safety and convenience. In view of these advantages, it is proper that we employ the saline infusion in all alarming hemorrhages.

This operation is uniformly followed by an improvement in the circulation. Should, however, the improvement in the circulation last but a brief interval, it is plain that the amount of blood remaining is incapable of carrying on the condition necessary for life and then it is evident that transfusion must be performed in addition to infusion.

In addition, it has been pointed out by other authors that the saline infusion protects the internal organs from a too rapid and extensive abstraction of their parenchymatous fluids, which nearly always occurs after an extensive hemorrhage.

By saline infusion we mean the injection of a solution of sodium chlorid having the same strength as the serum of the blood (0.6 per cent.) into the veins of the bloodless subject. Some add to this a trace of sodium hydrate or sodium carbonate, while others contend that this addition is unnecessary and that should either the carbonate or hydrate exist in proportion of more than a trace, their presence would become positively injurious. Again, others dissolve the salt in a weak saccharin solution, or the infusion has been successfully carried out by Thomas and others with pure fresh milk.

As for the proper performance of infusion, there are several features to be observed. First of all, the solution should have a temperature of about 100 degrees F. The infusion must be made with a slow, steady and not too strong a stream. Ordinarily, sufficient force is obtained by raising the funnel or the vessel containing the solution to the height of an ordinary arm's length; should this convey the solution with too much force, the latter can easily be regulated by lowering the container to the desired level. The quantity to be employed must depend upon the nature of the case. It is not necessary in every instance to employ as much solution as the amount of blood lost; all that is required is to inject just enough of the solution to restore the tone of the circulation. Ordinarily twelve to fifteen ounces can be considered as the minimum quantity to be used for ordinary purposes, but from twenty to twenty-five ounces may be used in alarming hemorrhages.

The operation itself can be divided into three stages: First, the exposure of the vein, preferably at the bend of the elbow. In the second stage there is one feature that deserves emphasis, the transfusion tip should only be introduced into the vein while the fluid is running. The observance of this precaution not only washes apart the lips of the opening in the vein, but affords an absolute safeguard against the introduction of any air, which is one of the chief dangers associated either with transfusion or infusion. The third step consists in ligating the punctured vein and applying an aseptic compress.

The principal points in connection with the operation are: To have all steps performed in an aseptic manner, to be careful that the infusion is not made too rapidly nor with too much force, otherwise there will be danger of over distending and paralyzing the already much enfeebled heart. Care should also be exercised that too much fluid is not employed which might give rise to a two-fold danger. 1. By the unfavorable influence upon the corpuscles by the dilution of the blood. 2. By raising the intravascular pressure to such a degree as to occasion a rupture of one of the smaller vessels in some vital part of the economy. It is exceedingly important that great care should be exercised to have the salt solution absolutely free from any minute floating bodies, which if present might act as emboli producing death or perhaps a gangrene of one of the extremities.

Before dismissing the subject of transfusion and infusion we desire to recall the fact that owing to the extreme cerebral anemia which exists after dangerous hemorrhages, either of these operations can and should be performed without the use of an anesthetic. In this condition all manipulations are practically of a painless character and owing to the enfeebled heart an anesthetic would only be adding an additional danger.

ANTO-TRANSFUSION.

By anto-transfusion we understand the forcing of the blood by means of elastic bandages from the extremities to the more vital centers. The indications for this can be summed up as follows: Shock or any condition attended with relaxation and diminished vascular pressure. Again, this is very useful in guarding against accidents in anemic subjects during chloroform narcosis.

SUMMARY.

In conclusion I beg to submit the following:

1. In enormous hemorrhages the resulting danger are more frequently due to the reduced intravascular pressure than to the actual loss of blood.

2. In view of this the indications point more decidedly toward infusion than transfusion.

3. That transfusion has not received the attention which its merits justify.

4. In transfusion we possess a measure which in the severest hemorrhages is the only agent capable of restoring the vital functions.

5. The indication for transfusion includes any condition which reduces the total quantity of blood to a fatal degree or which alters the character of the blood to such an extent as to render it incapable of sustaining life.

6. When the transfusion is performed for the relief of a poisoned condition of the blood it should be preceded by venesection.

7. Centripetal is to be preferred to centrifugal transfusion.

8. In centripetal transfusion the injection should be made with a slow steady stream, carefully avoiding undue force.

9. In withdrawing the blood from the donor the veins afford an easier, safer and better source than the arteries.

10. Indirect transfusion with defibrinated blood is safer than direct transfusion with non-defibrinated blood.

11. In alarming hemorrhages infusion should be performed before transfusion; should however, the improvement be transient in its nature, the infusion must be supplemented with transfusion.

12. In addition to hemorrhages the indications for infusion include any pathologic state attended with a feeble pulse which is dependent upon a relaxed condition and a diminished intravascular blood pressure, namely, shock.

13. Restoring the tone of the circulation by infusion is not wholly dependent upon the increase of the intravascular pressure, but is in part due to the stimulating influence which the salt solution has upon the heart.

14. In performing transfusion or infusion after an enormous hemorrhage, the use of an anesthetic is not only unnecessary but absolutely dangerous.

15. In the anto-transfusion we have a valuable measure for combating shock and preventing accidents in anemic subjects during chloroform narcosis.

OVARIAN TUMORS COMPLICATING PREGNANCY; WITH REPORT OF A CASE.

Read before the Chicago Medical Society, June 15, 1896.

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Within the last ten to fifteen years the management of this interesting and important, if somewhat uncommon, complication of pregnancy has become much more uniform, with a corresponding improvement in the prognosis. While formerly the let alone policy, the induction of premature labor and the puncture of the tumor were methods quite commonly employed, now the much better results obtained from ovariotomy are generally known and recognized, and this mode of treatment has been substituted for the others. Two questions of much interest are still undecided. One is, Which is the better route to reach the tumor, the abdomen or the vagina? The other is, What is the best time to operate? The following case is presented because it may have some bearing on these mooted questions and because the casuistic contributions are not yet too great:

Mrs. C., aged 32 years, III-para. Family history good. Nothing abnormal in menstrual history. First pregnancy, four years ago, was without complications. Labor was slow and forceps were applied, probably unnecessarily. Laceration into the rectum with severe hemorrhage resulted. A few months later I was first called in and repaired the laceration. During the examination a small tumor was noticed on one side. The differential diagnosis was not made between a small cyst of the ovary, a parovarian cyst and a pedicled subserous myoma of the uterus.

Soon after the operation the patient again became pregnant. This pregnancy was also undisturbed. I attended her confinement, which was quite normal. After labor the adnexa tumor was again noticed as a rather hard mass, to the side of the uterus, about one inch in diameter.

May 4, 1896, the patient came to me, to arrange for her next confinement. She had removed from the city to a suburb. She had no suspicion of anything abnormal and complained only of feeling unusually weak with much distension of the abdomen. Her last menstrual period occurred Nov. 1 to 4, 1895. Fetal movements were first felt March 17, 1896, *i.e.*, in the twentieth week. She therefore would be in the beginning of the twenty-seventh week of pregnancy.

Examination disclosed the following condition: The uterus lay in the left side of the abdomen, the fundus being but a finger's breadth below the ribs. The child lay with the head presenting, freely movable above the pelvis and corresponding in size to the supposed age of the fetus. In the right side of the abdomen, extending about two inches above the navel, was a tumor which could be distinguished from the uterus by a groove which ran along between it and the uterus one to two inches to the right of the median line. Through the vagina the pelvis was found filled with a tumor apparently in connection with the tumor in the right side of the abdomen. The cervix was reached above the symphysis a little to the left of the middle line.

May 12, in the twenty-eighth week of pregnancy, I operated at the Policlinic Hospital, with the valuable assistance of Professor Henrotin. On opening the abdomen the large veins of the pampiniform plexus, feeling like coils of intestine, were found lying in front of and to the left side of the tumor, which was not adherent. Its contents were evacuated through a trocar and an attempt made to follow the sac to its pedicle. Then it was found that the tumor arose from the left broad ligament, a fact that could have been suspected from the location of the pampiniform plexus on the left side of the tumor. With considerable difficulty the sac was pushed under the gravid uterus, its broad pedicle ligated and the sac removed. The abdominal wound was closed with deep sutures through the skin and muscular layers, and two rows of continued sutures through the peritoneum and the muscular fascia. A small accidental incision of the peritoneum covering the uterus had been closed with three sutures.

The tumor sac, which held nearly two quarts of brownish transparent fluid, was plainly of ovarian origin.

For thirty-six hours after the operation the patient had considerable pain, for which she received three or four hypodermic injections of one-fourth grain morphia. There was also considerable nausea for two days, but after free action of the bowels she became easy and made a good convalescence. Except for a temperature of 101.2 degrees the evening after the operation there was no fever. As a special precaution against premature labor she was kept in bed till the twenty-third day. She then got up and improved rapidly in strength, and on June 7 felt perfectly well and planned to leave the hospital the next day. During the night, however, labor pains came on, resulting in the delivery of a living child June 8, 9 A.M., not quite twenty-eight days after the operation. The labor was not unusually painful and the abdominal wound, which had perfectly healed, was not disturbed. The placenta was delivered shortly afterward by the Duncan mechanism. Its uterine surface contained several old hemorrhagic fibrinous patches and was quite friable. The child was 43.5 cm. long and weighed about three pounds. It was not very vigorous, and was kept in an improvised couveuse and fed every hour. In spite of this attempt to save it the child became cyanosed and died about eight hours after birth. The patient was

rather weak after labor and had a temperature between 100 and 101 for two days, which then became normal. She is now, one week later, perfectly well.

This case illustrates the rapidity of growth of ovarian tumors during pregnancy. Two years ago, at the last confinement, the tumor was not more than one inch in diameter. There were no symptoms indicating anything abnormal in the pelvis before the beginning of pregnancy; hence we may conclude that the growth of the cyst went on hand in hand with the development of the egg. It was, no doubt, at first located posterior to the uterus, and as it gradually grew to fill the pelvis the uterus was crowded up into the abdomen. Perhaps because the patient was in the habit of lying on her left side, the uterus came to occupy the left side of the abdomen, while the tumor, as it rose out of the pelvis, came to lie to the right of the spinal column.

Two views have prevailed concerning the influence of pregnancy in modifying the rate of growth of an ovarian tumor. Koeberli held that the growth of the tumor might be retarded by pregnancy on account of an increasing pressure and cessation of ovarian activity. A case of Spencer Wells is often cited in support of this view. A patient had a dermoid cyst for eighteen years which decreased in size during successive pregnancies and increased after labor. On the other hand, most cases, like the one reported, support the views of Spiegelberg, who held that ovarian tumors grow more rapidly during pregnancy on account of the increased supply of blood to the pelvic organs. This also accords with the fact that other pelvic tumors, especially fibromyomata of the uterus, increase rapidly in size during pregnancy. There are probably three chief factors which determine the rate of growth, namely, the supply of blood, the degree of pressure on the tumor and the nature of the tumor. In reference to the last element it is well known that dermoids do not grow as rapidly as ovarian or parovarian cysts with fluid or colloid contents. The effects of pressure are seen in cases of tumors which are confined to the pelvis. They may cause much pain and disturbance of the bladder or rectum, and become serious obstacles to labor, without growing to a large size.

In my case the diagnosis was made without difficulty, thus supporting the statement of Schroeder that, with a careful examination repeated if necessary, and making use of anesthesia, a diagnosis is always possible. Yet a mistake is often made. Quite frequently the pregnancy has been recognized and the complicating tumor overlooked. Generally, in these cases, the tumor is small and may cause no disturbance during confinement. If it be located in the pelvis and not spontaneously drawn up into the abdomen, it becomes an obstacle to labor which, undetected, leads to the most dangerous obstetric operations. Forceps are applied, great force is employed, the tumor is ruptured and hemorrhage or peritonitis with death results. Or the soft parts are severely torn, and bleeding with probable infection cause severe illness or death. If the unrecognized tumor be large and labor be not obstructed, it may be mistaken for a twin.

Again, the pregnancy may be overlooked in the presence of a tumor. This was true in eight out of 135 cases of ovariotomy during pregnancy collected by Dsirne. In several of these cases pregnancy was not discovered, even after opening the abdomen, until the gravid uterus was punctured or incised for a supposed tumor sac. Should the uterine cavity be opened, either through mistake in diagnosis or accidentally, it should be emptied of its contents and its walls united as in a conservative Cæsarean section.

The symptoms which indicate pregnancy in the presence of an ovarian tumor are the cessation of menstruation and the usual symptoms of uncomplicated pregnancy. The symptoms of a tumor when the fact of pregnancy is established are sometimes prominent and often nearly lacking. If the tumor is in the pelvis, the bladder and rectal symptoms with bearing down pains and backache are present. If large, the distension of the abdomen with dyspnea and disturbance of the functions of the kidney and liver are to be expected. Yet it is remarkable how often nearly all symptoms may fail, as illustrated in my case, and then we must rely on physical signs, never omitting the vaginal examination.

If the diagnosis be made during pregnancy, the method of management must be determined by the urgency of the symptoms calling for immediate interference, and the probable result to be expected from leaving the case to nature or from active treatment. Pressure on the heart, lungs, stomach, liver or kidneys, due to a large tumor in the abdomen, resulting in dyspnea, edema, symptoms of intoxication, etc., may call for immediate relief. A tumor confined to the pelvis may also cause so much disturbance, both directly and reflexly, as to render its removal desirable. Another indication for interference may be the danger of abortion. Jetter found among 215 cases, 36 of abortion and premature labor, *i.e.*, about 17 per cent. Pregnancy may be interfered with in one of two ways. The disturbance of the uterus caused by pressure of the growing tumor may directly bring on uterine contractions, or the same pressure may limit the blood supply to the fetus and cause its death, thus secondarily producing labor pains. Twisting of the pedicle with resulting shock or hemorrhage into or rupture of the sac, may also call for immediate interference during pregnancy.

If no interference be instituted and pregnancy go on to term, it may end in various ways. The prognosis has been variously given in different statistic tables. Litzmann records twenty-four deaths in fifty-six labors, *i.e.*, 43 per cent. Jetter gives the death rate at about 30 per cent. Heiberg, as quoted by Müller, found among 271 cases that one-fourth of the mothers and three-fourths of the children died.

The most favorable termination is when the tumor opposes no obstacle to the expulsion of the child. Sometimes when the tumor at first lies in the pelvis there is spontaneous reposition, *i.e.*, it is spontaneously drawn up into the abdomen so that the child can be born. In still other cases it is possible to dislodge the tumor from the pelvis by manual interference. This is the treatment that should be tried first in all cases where the tumor is discovered after labor has already begun. One should always make use of anesthesia, and also place the patient in a favorable attitude, such as the knee-chest position. Care should be taken not to rupture the sac.

If the tumor can be gotten out of the way so as to allow the expulsion of the child, it often falls again into the pelvis and prevents the delivery of the placenta. Here a second reposition, not always very easy, must be made.

The dangers from the tumor are not yet over when

the uterine cavity is emptied. If the tumor again returns to the pelvis it may compress the cervical canal and cause a lochiometra. Post-partum hemorrhage may be caused by adhesions between the tumor and the uterus, preventing efficient uterine contractions. But the most dangerous of all complications are those due to rupture of the tumor or to its rotation and the twisting of the pedicle. Lawrence reports ten cases of this kind requiring laparotomy, and Condamin among others calls special attention to this danger. Suppuration of the tumor is also a frequent occurrence after labor. So common are these results, and so dangerous, that it has become the rule to remove the tumor very soon after labor. Schroeder recommended to wait six weeks, but more recent reports seem to justify a much earlier operation. In case any serious symptom arises denoting one of the complications just described, immediate laparotomy is at once to be done.

It is thus seen that considerable danger is to be anticipated even in the favorable cases where the tumor either causes no obstruction to labor or when it can be removed from compromising the parturient canal. Yet much more serious is the prognosis where the tumor can not be raised out of the pelvis. If it be a monolocular cyst with fluid contents it may be evacuated with a trocar from the vagina. If it be multilocular or if the contents be colloid, or if we have to do with a dermoid cyst it becomes necessary to make an incision into the posterior vaginal wall and break up the contents with the finger. If the tumor be solid it must be removed, through a vaginal incision if that be possible, if not by laparotomy. Should it be impossible to remove the tumor by either route a Cæsarean section must be made. In case the vagina be incised, either for the purpose of breaking up and evacuating the contents of a tumor, or to remove the tumor it is desirable to close the wound before the passage of the child in order to obviate infection or to prevent further tear. This is often difficult to accomplish because the head generally enters the pelvis as soon as the tumor is removed. An attempt may be made to prevent this undesirable rapid progress by elevating the pelvis and keeping the head in the abdomen.

The results of the obstetric operations, the application of forceps and version with manual extraction, are so bad that they should be done only in the most exceptional cases. Version should never be done in a head presentation and forceps, with a mortality of over 50 per cent., are rarely to be used. If the head be firmly wedged between a solid tumor and the side of the pelvis so that the removal of the tumor is impossible perforation and craniotomy is the safest procedure.

When labor is obstructed and no interference at all is instituted the outcome is generally fatal. The woman may die undelivered from exhaustion, or from rupture of the uterus or from infection. The cases are slightly more favorable when the cyst ruptures. If the contents are those of a dermoid the peritoneum will probably be infected and peritonitis result. Cases have occurred when the vagina has ruptured and the tumor extruded followed by the birth of the child.

Since the dangers during labor are great and even if these be overcome the dangers of the puerperium are considerable it becomes important to investigate the results of interference during pregnancy. Three methods have been advocated: induction of premature labor or abortion, puncture of the sac and ovariotomy. The first method which was championed by Barnes is now entirely given up since the results of ovariotomy are so much improved. It sacrifices or greatly jeopardizes the life of the child and leaves the mother with the tumor and exposed to all the dangers that arise from its rupture, torsion or suppuration.

Puncture of the sac was warmly advocated. Twelve or fifteen years ago even by so eminent a laparotomist as Sir Spencer Wells. It is now generally given up during pregnancy for the following reasons:

1. It gives only temporary relief since the sac often refills very quickly. Atlee punctured a cyst sixteen times and then was obliged to perform laparotomy.

2. There is danger of injuring large blood vessels. Whoever has seen the large veins of the pampiniform plexus during pregnancy must have this danger clearly in mind. In my case I first mistook them for coils of small intestine. One never knows where they lie, on account of the rotation of the tumor, or, as in the case reported, the displacement of the tumor to the opposite side from which it originated.

3. The uterus may be punctured or injured. This has happened a number of times. Should the accident occur Cæsarean section should at once be made.

4. The peritoneum may become infected by the contents of the cyst escaping through the opening made by the trocar.

5. The formation of adhesions with their resulting consequences are an objection to puncture the same as in non-pregnant conditions.

These two palliative operations being discarded there remains to consider only ovariotomy. The results of this operation have been shown so satisfactory by recent statistics that now there is almost universal agreement in advising it. The most recent collection of cases was made by Dsirne in 1893, who has given synopses of the reports of 135 cases. Among these there were eight deaths, being a mortality of 5.9 per cent. The cases since reported would probably not increase the rate of mortality. This shows that the mortality rate for ovariotomy is not greater during than in the absence of pregnancy.

At this point I may consider the question. Which is the better route to reach the tumor, through the abdominal wall or through the vagina? Until quite recently the abdominal route has been selected because it was supposed to furnish a better oversight of the field of operation and enable one to meet the complications that may arise. Especially when the tumor lies more or less in the abdomen it may be difficult to remove it per vaginam. It may be multilocular or it may have colloid contents and there may be adhesions. The advantages of a vaginal operation are well recognized by those who have followed the recent progress of vaginal celiotomy. It leaves no scar in the abdomen to become a hernial opening, and it is a much slighter operation and thus less likely to disturb pregnancy. When we look back to the case reported we see that the vaginal operation would have been easier. The cyst could have been emptied and the sac pulled down and tied off without difficulty. There was considerable disturbance of the uterus in replacing the sac under it. Recent improvement in the technique of vaginal operations has led to the performance of many vaginal ovariotomies and I predict that in the future the operation will be employed much more commonly in these cases.

Another very important question concerning ovar-

iotomy during pregnancy is its influence in interrupting gestation. Olshausen found pregnancy interrupted in 20 per cent. of the cases collected by him numbering 82, while Dsirne in 114 cases found the percentage of interruption to be 22 per cent. Different explanations have been given of the way in which pregnancy is disturbed. Sometimes there is imminent danger of abortion before the operation. Martin reports such a case where abortion was prevented by the operation. The uterine contractions excited by the tumor cause placental hemorrhages of greater or less extent. These disturb the fetal circulation so that the death of the fetus and its subsequent expulsion may result perhaps some time after the operation. Or these hemorrhages occurring before operation may predispose to still more extensive hemorrhages when operative manifestations or vomiting excite still further uterine contractions. Any injury to the uterus as in the separation of adhesions or a wound of the serous coat would help to excite contractions.

Another cause of abortion is the disturbance in the blood supply of the uterus due to the ligation of the ovarian artery. This factor would probably be especially potent in case of a double ovariotomy.

It is quite interesting to study the table given by Dsirne, which shows the effect of the operation in disturbing pregnancy at different fetal ages.

At Mos.	No. Cases	Interruptions of Preg.	Percentage.
2	11	5	45.5
3	28	4	14.3
4	21	2	9.5
5	10	4	40.0
6	11	4	36.4
7	5	3	60.0
8	5	2	40.0
9	1	1	100.0

From this table it is seen that the most favorable time for operating, so far as the fetus is concerned, is during the third and fourth months when only 10 to 15 per cent. of the cases abort. Later 40 to 50 per cent. of interruptions of pregnancy may be expected.

These results are not very satisfactory and have led to considerable discussion concerning the advisability of postponing the operation, in the absence of urgent symptoms, until the child is viable. Fehling and Veit have contended for this rule. Nearly all authorities, however, agree with Schroeder and Olshausen in advocating operation as soon as the tumor is discovered, because of the danger of abortion, rotation of the tumor with constriction of the pedicle and peritonitis, rupture of the cyst, dyspnea, etc. It has not been proven that twisting of the pedicle occurs more commonly during than in the absence of pregnancy. Dsirne found it to occur in only 9.1 per cent. of his cases. This is not a much larger ratio than is found in all cases of ovarian tumors. It is in striking contrast to the frequent twisting found during labor and in the puerperium.

Another objection might be raised to postponing the operation to the last month of pregnancy where in at least half the cases labor will be brought on, namely, the danger of breaking open the abdominal wound. I am inclined to think that there is prevalent an exaggerated fear of the effect of labor pains on a laparotomy wound. The question can be settled only by an examination of the records. I have looked up accessible cases where labor occurred within some days or even weeks after the operation. In but few cases was there any reference to the effect of labor on the abdominal wound. Generally the reports mention only an uninterrupted recovery. One of the most important cases is reported by Pippingsköld. He removed a large tumor from a patient in whom labor pains had already begun. Labor was completed in a few hours after the operation with no hemorrhage from the stump and no disturbance of the abdominal wound. The only case I have found where reference was made to an abdominal hernia was one of Schroeder's. The operation was made in the fourth month and was followed by abortion thirteen days later. The patient afterward had two children and during the second subsequent pregnancy it is noted that she was troubled with a large abdominal hernia. That this would be laid to the abortion is hardly reasonable in view of the not unfrequent occurrence of hernia after laparotomy in the absence of pregnancy. In my case labor did not cause the slightest disturbance of the abdominal wound.

The question of the time for the operation in its bearing on the prevention of abortion is one of the most important. Each case must be decided on its own merits. If the patient has no children greater effort should be made to save the child than if she has a number, especially does this rule hold when the tumor is double. If the tumor be discovered in the second month the operation should be delayed a month or two because the results in the second month are bad. After the fourth month if the symptoms of dyspnea, etc., including those of impending abortion, be not too urgent it may be desirable to wait until the thirty-fourth or thirty-sixth week provided the patient can be kept under observation. After operation the patient should not rise too early and the first symptoms of labor should receive prompt attention.

426 Center Street, Chicago.

IN FUTURE BATTLES WHERE SHALL THE FIELD HOSPITALS BE PLACED?

BY EDMUND ANDREWS, M.D.

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Behind every fighting line there is a danger space within which lie the wounded. The modern long range rifles, and the new far reaching artillery have greatly widened this zone, while the increased rapidity of fire may sweep the ground with such fierceness that within its range ambulances can not approach, litter bearers can not carry off the wounded, and surgeons can not work. In case the field is very level and devoid of shelter, the problem of where to place the field hospitals, and how to get the wounded back to them has become one which greatly perplexes military surgeons.

Take for instance the level plain on which Chicago stands. From Lake Michigan west to DesPlaines River, and from Evanston southward to Thornton extends a level plateau ten miles wide and thirty miles long, on which the natural contour of the ground affords not the slightest shelter from fire. If two modern armies should meet on such a plain, what could be done with the wounded?

The arrangements of the medical department in battle in a general way are as follows:

A portion of the medical officers accompany the fighting line to give what is called "first aid" to the injured, in which they are assisted by a certain number of fighting privates who have received special

training, and non-combattant "Geneva Cross men," who are still better educated. Whenever there is a lull in the firing these collect the wounded and make temporary first dressings.

The main surgical work is done at places called field hospitals, where are assembled all the surgeons not detailed to accompany the fighting line. In a level field, devoid of shelter, these must be located far enough to the rear so that the assembled patients shall not be cut to pieces by shot and shell nor the surgeons and their subordinates killed in such numbers as to stop the work. How far back must these hospitals go?

Surgeon Major Girard asserts that men may be wounded by the new rifle at 7,300 yards, which is over four miles. I think this is probably a misprint in the Major's article. At any rate no military officer will waste his ammunition at such ranges. Others advise to locate the field hospitals at 3,000 meters behind the fighting line. This is about two miles. Others say 2,000 yards, which is a little over one mile. After much study of the subject, aided by conference with the best military surgeons, and fighting officers, I have come to the following conclusions:

It is the artillery and not the small arms which will prevent the field hospitals in level ground from taking a position anywhere near the fighting line, because the shrapnel shells reach much farther than musketry.

Still the distance back to a fairly tenable hospital ground is exaggerated in many minds by the popular accounts of the great range of modern projectiles. The immense ranges of two, three, or four miles are only obtained by aiming up in the air at high angles and trying to drop the shells from the sky, as it were, among the enemy. This kind of fire is so very inaccurate, that it rarely hits anything, or endangers anybody. Now, artillery ammunition is costly, and very heavy to transport. It is therefore very precious and is reserved for nearer work. No commander will waste it by tossing it loosely all over the country. The artillery begins effective work at about 2,500 yards. It directs its shrapnel shells so as to explode them about fifty yards in front of the line aimed at, that the fragments and contents as they move onward may spread out in a cone and fly in the faces of the opposed troops. The fragments of shell and the enclosed bullets are thus dispersed in the air and soon lose their force. Hence a field hospital some little distance from the line is not in great danger. My observation is that a few badly aimed shells which have failed to burst at the proper point occasionally come into the vicinity, but they are not numerous enough to render the hospital untenable. Highly educated officers say that even on a level field surgeons can work without great risk 2,000 yards from the enemy, or a little over a mile. As their own lines will be nearer than those of the enemy, the field hospitals can usually be carried up to within 1,200 yards of where their own fighting line commences to meet many losses. But even this distance is too great to allow of getting the wounded back, if the enemy persists in sweeping the ground clear of all moving objects.

However, armies do not throw away much needed ammunition, by uselessly firing when there is no charge impending. Most of the firing comes in gusts, with lulls, and sometimes long intervals between. During the firing the injured should lie as flat on the ground as possible, getting behind any available shelter which may exist. When a lull comes, efforts can be made to get them back. About 70 per cent. of the wounded are able to walk and can go back of themselves. The remaining 30 per cent. have to be carried. Just here is the weak point in surgical arrangements. Although there are four Geneva Cross bearers to each litter, the carrying back of injured men long distances is a most exhausting labor. Lieutenant v. Kries of the Austrian army has experimented on the ability to stand this work. He found that the bearers rapidly broke down with fatigue. Thirty-two bearers, carrying eight litters, brought back a distance of about 1,200 yards only 32 men in about three hours; that is, the bearers can bring that distance in three hours only one man to each bearer, and at the end of the three hours they were exhausted and could do no more.

Now, the bearers number 2 per cent. of the fighting force. In a division of 10,000 men there will be 200 bearers carrying fifty litters. In the 10,000 men engaged, if the loss is severe, there will be 2,000 hit. Of these about 600 will be killed and 1,400 wounded. Of these about 980 will be able to walk, and 420 will require litters. The 200 litter bearers will be able to carry back 200 men to a field hospital 1,200 yards distant in three hours, and the bearers will be so far exhausted as to be obliged to stop, leaving 220 wounded at the front. If the action is only half as severe it would be possible to carry in all the wounded.

At this rate as the ambulances can not work any nearer to the front than the surgeons, it will be impossible to clear the field except by slow degrees, and perhaps by working all night, and searching the field with lanterns.

Lieutenant Melville of the British army comes to similar conclusions. He says in a British brigade of 4,000 suppose 10 per cent., or 400, to be hit. About 30 per cent. of those struck will be killed, leaving 280 wounded. About 180 can walk and 100 will have to be carried, and it can be just barely done by completely exhausting the 80 bearers, if none of them are shot. If the action is more severe and 20 per cent. are hit, 100 will remain on the field after the bearers are exhausted. This looks discouraging; however it shows the great importance of lightening the work of the bearers by getting the field hospitals as close to the front as possible, even if the danger of the surgeons is increased.

The conclusion is this: If the field of battle is level and destitute of shelter, and the enemy insist on keeping the field swept of everything that moves, the wounded must lie where they are, with such first aid as the surgeons in front can give them, until the action is over, or the fighting lines move on elsewhere, and then the field hospitals must move up into their midst.

The opinion in army circles is that in the exigencies of battle, the fighting officers will not detail men from the ranks to aid the bearers, except when necessary to retreat before uncivilized hordes, who would murder the wounded if left behind.

The foregoing discussion is all based on the supposition of a level field such as surrounds Chicago. Fortunately such fields are few. In my own experience I never was in an action where there were not numerous hills and valleys, or at least considerable undulations of ground or standing timber. In these cases fighting lines stretch themselves along the crests, where the soldiers can lie just behind the summit ridge and fire over. The first aid stations can

then be close to the lines and the field hospitals need not be far off. I have sometimes located them less than 300 yards from the front, and even ambulances, conspicuous marks as they are, can sometimes be driven along the hollows, taking the wounded directly from the first aid stations.

Surgeon Fischer, of the Austrian army, thinks the number of wounded will be greatly increased. It seems to me that this popular idea is erroneous. Most of the fighting will be at greater distances than it was formerly, and the new guns are no more accurate than the old ones. Beside, experience shows that even well disciplined men can rarely be made to stick to their work after 30 per cent. of their number are hit. This old rule will be as true in the future as in the past, and no change in weapons will prevent men from shrinking from danger when it exceeds their fortitude.

Fischer also thinks the mortality of the wounds will be doubled, but Melville dissents from that conclusion.

The facts point in two directions. A few wounds will perhaps bleed more than the old ones, on account of swift shots cutting more like a knife than slow ones, but we must remember that the injuries will be inflicted at greater distances, when the bullets have largely lost their velocity.

Close shots will tear and shatter more in consequence of what is called the "explosive effect," but these only occur at near range. Most of the injuries will take place at greater distances, and the bullets being very small, the wounds will on the average be less fatal from shock, and less open to septic infection. Many will heal by first intention.

On the whole, I think that no more men will be hit than formerly, and that of those wounded more will recover.

Finally, all the utensils and everything about the field hospitals must be made as simple and portable as possible, so that they can be thrown into the wagon and rushed forward, at a moment's notice, to where the wounded lie, as soon as the fighting admits of the advance. In this way the men can be taken care of without waiting for the slow, interminable and exhausting work of litter bearers.

2520 Prairie Ave., Chicago.

E. WERTHEIM'S NEW METHOD OF RESTORING RETRODEVIATIONS OF THE UTERUS THROUGH THE VAGINA.

BY A. J. HOSMER, M.D.
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The operation consists in shortening the round ligament through the vagina. The technic of the operation in uncomplicated cases is as follows: After the necessary antiseptic precautions, the patient is placed in the exaggerated lithotomy position. (A curettement is performed, when indicated.) The limbs are supported, retractors used, and the cervix uteri is seized with bullet forceps and drawn down, as in vaginal hysterectomy. With a scalpel, a transverse incision about one and one-half inches long is made at the anterior utero-vaginal junction, down to the uterus. Now with the index finger or with blunt pointed scissors, the uterus is separated from the bladder. The vesico-uterine space (anterior cul-de-sac), or rather the peritoneum lining it, is reached with ease. The peritoneum is seized with two anatomic forceps and opened between them with the scissors. The incision is then extended transversely about an inch each way. Now while still holding to the ante-

FIGURE 1.

rior peritoneal flap with one of the forceps, a needle, with medium sized silk, is passed through it and attaches it to the cut edge of the anterior vaginal wall.

FIGURE 2.

Two other stitches are used attaching peritoneal flap to the cut edge of the vagina, thus entirely covering the raw surface of the bladder. Easily now with the

FIGURE 3.

fingers one can reach the body of the uterus and ascertain its condition as well as the state of the Fallopian tubes and ovaries. When necessary, loosen adhesions, replace ovaries, remove small subserous myomas, etc.

Next, unfasten the bullet forceps from the cervix, allowing it to go back as you roll the body of the uterus forward into the vagina or at least into plain view. If there are no adhesions, the uterus comes forward without force. If there are adhesions they are easily reached with the fingers and separated.

The round ligament is the first cord in sight and can be seen, examined and differentiated from ligamentum proprium and Fallopian tube. The ligament is seized from one to two inches from the horn of the uterus, with bullet forceps and drawn out, thus necessarily *doubliny it upon itself*. With medium sized silk, its approximating doubled surfaces are sewed together. By thus folding it upon itself by the use of three or four stitches, the round ligament can be shortened from six to nine centimeters.

The other round ligament is treated in like manner, and thus the uterus is *held up* and anteverted. The stitches holding the peritoneum to vagina are now cut and the two peritoneal surfaces re-united. The transverse incision at the utero-vaginal junction is then sewed vertically thus lengthening the anterior vaginal wall, and shoving the cervix back.

A little gauze is placed in the vagina and the operation is finished, in most cases without having tied a blood vessel, and unless the wound has been infected, without danger.

There is no danger of injuring the ureters, if the operation is done as described above, as they are shoved out of the way. In cases where there is a relaxed vagina and an anterior colporrhaphy is needed, instead of making the transverse incision, an elliptic piece can be removed from the anterior vaginal wall, and the bladder separated from the uterus directly under the eye. The round ligaments are treated as in the first case. In sewing up the vaginal wall you have, of course, done an anterior colporrhaphy.

This operation was first made by E. Wertheim of Vienna, in January, 1896, and his first publication of the same appeared in the *Centralblatt für Gynäkologie* in February, 1896, since which time it has been performed about twenty-five times and with perfect results.

Its advantages over the Alexander-Adams operation are: 1, it leaves no visible scar; 2, the operation is easier to perform, the ligaments being larger at this point and easy to find; 3, the transverse cut in the vagina, sewed vertically, assists in anteverting the uterus; 4, it allows perfect access to the pelvic viscera, thus permitting of minor repairing at the same sitting, when indicated; 5, the operation is less dangerous,

Its advantages over any method of anterior fixation which will prevent the free growing of a gravid uterus are very apparent. The bladder is left in its normal position. A subsequent pregnancy will not be hindered, as the shortened ligaments can stretch as in the normal state. That every antefixation which will prevent the free growing of a gravid uterus is likely to be the source of danger, is well illustrated in Miländer's report (*Zeitschrift für Geburtshülfe und Gynäkologie*, Bd. xxxiii, Hft. 3). In fifty-four cases of full term labor after ventrofixation, eleven were operative, four forceps, two Cæsarean sections, four turning and one extraction.

The uterus is not only anteverted, but it is *held up*, as one can very easily prove by doing the operation upon the cadaver, and the organ is not ante*fixed*, but held in its normal position by its normal attachments.

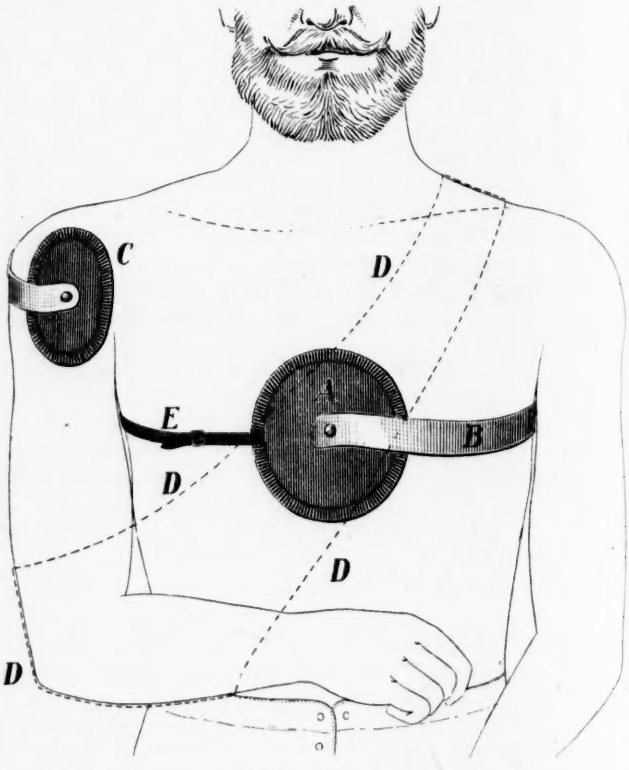
This operation I have witnessed frequently in Schauta's operating room, and the ease and rapidity with which it is done, beside its many advantages over other known methods, is my excuse for sending this report.

For the past year, I have not had access to any medical journal except the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, hence if this method of E. Wertheim's has been reported in an American medical journal, I am ignorant of the fact.

A NEW APPARATUS FOR FRACTURE OF THE CLAVICLE.

BY EVAN O'NEILL KANE, M.D.
KANE, PENN.

The treatment for fracture of the clavicle is almost uniformly unsuccessful. Were it not that the resulting rounded shoulder, narrowed chest and bone deformity do not materially injure the patient, the best surgeons would be continually mulcted in malpractice suits.



Front. A, chest pad; B, spring on sound side; C, shoulder pad and spring on injured side; D, dotted lines indicating ordinary sling; E, elastic strap and buckle.

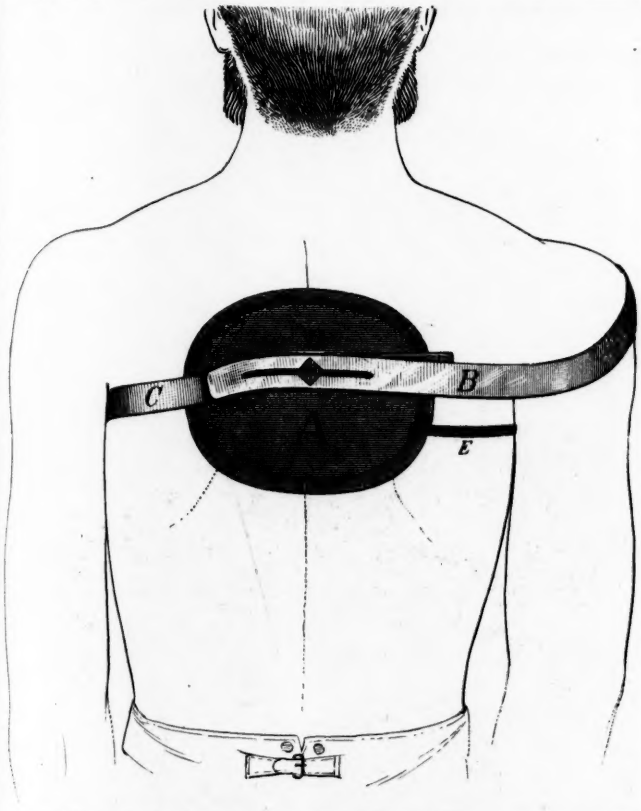
It is true that if the patient can be placed for three or four weeks upon his back; a narrow cushion below and a shot-bag above, a perfect result may be obtained; but few can bear with so irksome a treatment for so comparatively trivial an injury. No other methods of treatment produce perfect results; and all are painful or even prejudicial to the patient's health. Many of these apparatus are now discarded as cumbrous, complicated and unsatisfactory. the pad in the axilla sooner or later exerts so much pressure upon the nerves and vessels as to require its removal. Bandaging the arm across the chest, rarely attains more than fixation and the prevention of falling of the shoulder, while it so cramps the arm and constricts

the chest as to make it unbearable for sensitive patients.

The plaster of paris figure of eight and the adhesive plaster dressing are fairly satisfactory, if they can be endured, but they are, especially in warm weather, very difficult to be borne for more than a few days, and when removed the arm on the injured side is sometimes so paralyzed, swelled or cramped as to be nearly useless for a number of days, while, the results are not perfect in either case.

The displacement in fracture of the clavicle may generally be stated as occurring inward, forward and downward, while on account of the difficulty of overcoming the shortening incident upon muscular contraction considerable over-riding is present.

On account of the difficulty of obtaining a proper point d'appui but one of the deformities is ever completely obviated, *i. e.*, the downward displacement



Back. A, back pad; B, spring passing forward around injured shoulder to terminate in front in small shoulder pad; C, spring passing around chest on sound side to terminate in large pad on middle of chest; D, set screw and slot in spring; E, elastic strap.

usually rectified by some form of sling. I am omitting the treatment by dorsal decubitus.

By my spring-lever apparatus and a sling I believe I have obviated all the difficulties formerly met, securing to my patients fair motion of the thorax and comparative freedom to the hand and arm of the injured side; a perfect co-aptation of the fragments; freedom from shortening and practically no deformity with a minimum of discomfort. My device consists of a combination of springs and pads with an elastic strap. The springs, two in number, are fastened, one on each side, by a screw bolt to a large pad behind, each terminating in front in another.

One pad, large and circular, acts as a counter pressure upon the chest from in front; the other, a smaller one at the termination of the spring on the injured side, is arranged to press upon the anterior surface of that shoulder. Thus the spring passing from the back pad around the sound side to the chest pad holds the whole apparatus in position, although, allowing full play to the respiratory muscles, while the spring passing from the same position behind, around forward and over the shoulder on the injured side, by its continued traction backward drags the shoulder with it, prevents over-riding or angular deformity of the bone and yet allows motion. The elastic strap though not necessary is an additional security against sliding of the apparatus. It is fastened to the back pad and passes around the thorax on the injured side to be attached to the chest pad in front, and with quiet patients can often be dispensed with.

The same result is attained and maintained *permanently* when the apparatus is in position as that *transiently* produced by the surgeon when he grasps the shoulder and draws it backward in setting the bone; and which he is unable to retain with his dressings when he relinquishes his grasp unless he places his patient in the dorsal decubitus.

In addition, an ordinary sling is required in order to keep the shoulder from falling, but this does not cause any discomfort. The apparatus, which can be taken off or put on as readily as the simplest rupture truss, may be removed every night when the patient retires. He must then, however, lie upon his back, preferably along a narrow cushion. This he is glad to do on account of the additional freedom and comfort afforded. It requires no skill on the part of the attendant to replace the apparatus when the patient arises in the morning.

This contrivance may readily be constructed with a combination of slots and set screws to enable it to serve for either right or left side and for various breadths of shoulders.

In my hands it has been productive of perfect results, as well as affording far less discomfort than any other method of treatment which I have adopted and, though more expensive than ordinary bandages and adhesive plaster, it pays both surgeon and patient amply for the slight extra expense in the comfort it affords, and the freedom from deformity which follows its use.

SOME UNUSUAL CONGENITAL DEFORMITIES.

Read before the Tenth Annual Meeting of the American Orthopedic Association, at Buffalo, May 18–20, 1896.

BY JOHN RIDLON, M.D.

Professor of Orthopedic Surgery, Northwestern University Medical School; Senior Orthopedic Surgeon to St. Luke's and Michael Reese Hospitals, and Surgeon-in-charge of the Home for Crippled Children, Chicago.

Believing it to be the duty of a specialist to present a record of unusual cases to his associates, I beg to offer for your consideration a brief report of the following cases that have come under my observation during the past three years.

Case 1. Congenital constriction bands, etc.—H. D., male, 2½ years old, the first child of healthy parents. There is no physical defect or deformity in the family for at least three generations. The pregnancy and birth were uneventful and in all respects normal. The mother is unable to offer any suggestions as to a possible cause for the deformities.

Left hand: The index finger was joined (webbed) to the ring finger, and the ring finger to the little finger from the tips nearly to the junction of the proximal and middle phalanges; and the middle finger was amputated at the end of the proximal phalanx and was pointed (conical). Otherwise the hand was normal.

Right hand: The index finger was joined (webbed) to the ring finger as in the other hand, and the middle finger was amputated and conical (see Fig. 2); but the little finger instead of being webbed as in the other hand was incircled by a constriction band between the root of the nail and the distal joint (see Fig. 2). Otherwise the hand was normal. When first seen by me all the webbed fingers on both hands had been amputated at the end of the proximal phalanges as shown in Figs. 2, 3 and 4.

Left foot: A constriction band incircled the great toe. Otherwise the foot was normal.

Right foot and leg: The foot presented a moderate degree of talipes equino-varus. This had only been treated by occasional gentle hand stretching by the mother. Around the

FIGURE 1.—Case 1. Congenital constriction band and talipes equino-varus.

ankle was a constriction band (see Figs. 1 and 2) having the appearance of cicatricial tissue, about a quarter of an inch in width. This band creased the soft parts very deeply, about three-eighths of an inch at the front of the leg and about seven-eighths of an inch at the posterior and inner side. The mother reported that at birth there were no voluntary movements in this right foot, but that at the time the fingers were amputated this constriction band around the ankle was incised transversely in three places, and that since that time there have been some voluntary movements in this foot, and that these have increased under rubbing and manipulations. No other deformities or peculiarities were found.

FIGURE 2.—Case 1.

Treatment: Under the impression that there would be no difficulty in looking up the literature of the subject, I arranged to operate on the constriction band about the ankle, but I was not able to find a report of an operation upon such a case. I therefore made two circular incisions around the leg, one above and the other below the band and dissected it out. I found little or no subcutaneous fat beneath the band, which appeared to involve only the skin except at the points of the three transverse incisions already referred to. At these points the cicatricial tissue extended deeply; it was dissected out. The skin and superficial fat and connective tissue were then dissected up for about half an inch entirely around the leg, both above and below; these edges, bridging over the crease, were brought together and sutured, and dressed without drainage. The result, a year later, is shown in Figs. 3 and 4.

The equino-varus was operated upon about four and a half months after the operation upon the constriction band, by subcutaneous division of the Achilles tendon, manual rupture of the posterior ligament of the ankle joint, and subcutaneous division of the anterior half of the deltoid ligament.

Case 2, was one of congenital constriction bands very much like Case 1, but only affecting the lower extremities. The parents of the patient refused operation; it has been lost sight of, and my notes of the case have also disappeared.

FIGURE 3.—Case 1. Showing result of operation on constriction band.

Case 3. Congenital amputations.—Male child, 3 months old when first seen. Born with both legs amputated at the knee joints, and left arm amputated at the elbow joint. No other congenital deformity or defect. This was the third child of healthy and well formed parents, and the mother knows of no congenital deformity in either her family or her husband's family. The child died in Cook County Hospital before photographs were obtained.

Case 4. Congenital rickets.—Congenital rickets is, in my experience, exceedingly rare. Indeed, this is the only case I have ever seen. For the photographs of this case and the history I am indebted to Dr. John L. Porter, late House Surgeon to St. Luke's Hospital, Chicago, and now assistant to the Chair of Orthopedic Surgery in the Northwestern University Medical School.

This child (Figs. 5 and 6) was born at St. Luke's Hospital, Chicago, on Feb. 3, 1896, in the service of Dr. J. C. Hoag. Weight at birth 7 pounds. The head presents a typical cranio-tabes, the entire vault from the frontal

prominences to the cerebellar fossæ of the occipital bone and between the two parietal bosses being soft and membranous and without ossification. There are small centers of ossificatian at each of the above named centers. At birth the parieto-occipital, parieto-frontal and parieto-temporal articulations overlapped. In the upper extremities there was marked enlargement at the distal epiphyses of the radii. In the lower extremities there was a marked exaggeration of the anterior and outward curves of the femora, but the most marked deformity was in the anterior and outward bowing of tibiæ and fibulæ, together with the enlargement of the distal epiphyses. The feet tended somewhat toward the equino-varus deformity. Tenderness to pressure and manipulation was noticed very early at the enlarged epiphyseal junctions and to some degree over all bony prominences.

FIGURE 4.—Case 1. Another view after operation.

The photographs, Figs. 5 and 6, were taken on the tenth day after birth. They do not show the bowed femora nor the anterior bowing of the shins to advantage.

The mother, 36 years old, has had ordinarily good health since childhood. She has by a former husband two other children aged 15 and 4 years, both in good health and free from deformity. No history of syphilis in the mother or in either husband can be obtained. During the last pregnancy the mother has been in extremely poor circumstances, and has been at work with poor hygienic surroundings and insufficiet nourishment up to the date of confinement.

Case 5. Congenital recurvated knees; knock-knees; talipes equino-varus; spina bifida, with incontinence of feces; and convergent squint.—The child, a female, was 21 months old when first seen by me; at the time the photographs were made. According to the mother's statement the knees were recurvated about 20 degrees at birth, and very little passive motion at the joints was possible. Under manipulation the motion has increased. They can now be extended (recurvated) to about the degree above mentioned, and can be flexed about 10 degrees beyond the straight as shown in Fig. 7. The patella can only be felt as minute hardish nodule in the tendon extending from the quadriceps femoris muscle to the tibia on either side.

The knock-knees and the talipes equino-varus, both of only moderate degree, are shown in Figs. 8 and 9.

The spina bifida was the size of a small orange and of firm consistency. The mother stated that it had been much larger prior to the operation by the family physician. The operation appears to have been simply suturing the tumor through and through. A crease, apparently the suture line, appears on each side; one of these is seen in Fig. 7.

The incontinence of feces apparently depends upon the spina bifida. The urine is passed with unusual frequency, but there can not be said to be real incontinence.

FIGURE 5.—Case of congenital rickets, showing anterior and outward curvature of tibia and enlarged epiphyses of tibiæ and radii.

The convergent squint is seen in Fig. 8. It is not of marked degree and is seen sometimes in one eye and at other times in the other. The bridge of the nose is sunken and the frontal prominences are protuberant.

The child appears mentally deficient. The parents and the other children are healthy and well formed, and the mother can offer no plausible explanation for the defects in this child.

Case 6. Congenital polio-myelitis anterior.—C. S., female, 9 years old when first seen by me. The mother states that at the birth of the child the labor was very difficult and prolonged; and she believes it was dry labor. Dr. Charles Gilman Smith was the attending physician and Dr. W. W. Jaggard, the consultant. Both are now dead and no positive record of the condition at birth can be obtained. Dr. Smith, however, advised operation on the feet. Dr. Charles Adams advised against the operation and none was done. Later, the late Dr. Mathias Roth, of London, England, prescribed elaborate and minute forms of

massage, and the use of steam to induce muscular contraction. Under his direction day braces and night braces were worn. Mr. Bernard Roth has not been able to find any record of this case although the mother is positive that he saw the case with his father. Still later, Dr. Dobie, and his son, Dr. Henry Dobie, of Chester, England, advised an operation, but the advice was not taken and Dr. Roth's treatment was continued for some years.

FIGURE 6.—Case of congenital rickets and cranio-tabes, showing unossified portion of skull with exception of fontanelles.

The child did not walk until 2½ years old. The braces ordered by Dr. Roth and made by Ernst, of London, were copied by Sharp & Smith, of Chicago, and she continued to wear them until seen by me.

FIGURE 7.—Case 5. Showing spina bifida, and full degree to which flexion of knees was possible.

At that time, both feet were held in full extension (equinus) without lateral distortion. The anterior part of the feet was broadened and the Achilles tendon attached to the inner side of the posterior border of the os calcis in each foot as it usually is in congenital talipes equino-varus; the leg muscles were shrunken, and the whole general appearance of the legs and feet, taken with the history of the case, led

FIGURE 8.—Case 5. Showing knock-knee and talipes varus.

FIGURE 9.—Case 7. Showing deformities of fingers and toes.

me to look upon the case as an ordinary case of con-

genital equino-varus and to prognosticate a development of strength in the dorsal flexors of the foot when relieved of the strain of the extended position.

I divided the Achilles tendon subcutaneously, and had no difficulty in fully dorsal flexing the feet. Good union of the cut tendons took place at the end of two weeks. After this the patient was allowed to walk in braces that prevented the toes from dropping beyond a right angle with the legs, and massage was given daily. At the end of a year and a half the feet remain in good position, but there is no ability on the part of the patient to dorsal flex the feet. Had the case been one of ordinary congenital talipes equino-varus normal strength in the dorsal flexor muscles would ere this have developed; but from the results of treatment I can only conclude that the deformity was due to an intrauterine attack of poliomyelitis anterior.

Case 7. Congenital constriction bands.—I am indebted to Dr. Chas. E. Thompson, of Scranton, Pa., for permission to publish the following case:

J. L., male, 6 years old, robust and strong in every way (Fig. 9). Father, mother, three brothers and three sisters living, well and well formed. The mother attributes the deformity to the fact that during the third month of her pregnancy she tied a cord tightly around her own finger to stop the bleeding from a cut.

At the birth of the child the following deformities were noted:

Right hand: Constriction band around the middle finger, in front of the nail on the dorsum and somewhat farther back on the palmar surface. See Fig. 9. Otherwise the hand is normal.

Left hand: All of the middle finger beyond the distal end of the proximal phalanx was absent "except a mere thread" which the mother removed. The remaining stump is shown in Fig. 9. Otherwise the hand is normal.

Right foot: Distal phalanx of great toe amputated; and two distal phalanges of second toe amputated. Third toe has no nail. Otherwise the foot is normal.

Left foot: Great toe and second toe amputated as in the right foot. The third toe is considerably longer than its fellows. There is a constriction band surrounding the second phalanx; on the dorsum it approaches the third phalanx and on the palmar surface it approaches the first phalanx. The fourth toe is very much smaller than its fellow on either side. The fifth toe is normal as is the foot in every other respect.

SELECTIONS.

On Solid Preparations for Internal Use.—The past decade has wrought great changes in the administration of medicine. Responding to the more esthetic demand of the age, medical practitioners have quite largely dispensed with the older forms of liquid mixtures, and adopted the solid and more elegant products of the pharmacal art. While dry medication has been increasing in favor for the past twenty years, history discloses some of the errors its votaries have been led into. First was the sugar coated pill period, which set in about 1870 and reigned supreme until about 1880, when it was superseded by the gelatin coated pill, despite the attempt to stampede its followers in 1875 by the compressed pill. For ten years the gelatin coated pill was the favorite form, until the general use of gelatin capsules relegated it to the insoluble and unsatisfactory sugar pills of the patent medicine men.

The introduction of the tablet triturate some ten years ago met with much favor for the administration of alkaloid salts, and represented a convenient form for the ready preparation of solutions for hypodermic and antiseptic use. But, as disclosed by the history of other forms of medication, the original purpose of the tablet triturates was perverted, and in the modified form of compressed tablets, the "idea" was extended to comprise nearly every combination of remedies, irrespective of therapeutic uses, and in utter defiance of well-known chemic and pharmaceutic laws and principles.

For the purposes of studying the administration of solid substances, they may be grouped, from a therapeutic point of view, as follows:

Powders.—The medicinal agent in a finely divided condition, either alone, associated with some other agents or triturated with some inert substance. The object to be attained is either quick solution, absorption or local effect, which is produced in the degree that the mixture is finely powdered. Following the law of solution, the greater extent of surface presented to the solvent action, the more the process of solution is facilitated. With most substances the effect is a question of absorption, which is again dependent upon solubility. The only exception to this are sugars and gums, which dissolve so readily, and the solution formed is so viscous, as to interfere with complete solution except under certain conditions.

Troches, lozenges, tablets, pastils and similar forms by whatever name, mixtures of medicinal substances intended for solution in the mouth.—The medicinal agent is incorporated either with a dry diluent, such as sugar, and the mixture made into forms by compression, or into a mass with an excipient and then divided into various forms, as in pills. The medicinal agent is mixed with the diluent or excipient, which, being sugar or gum, slowly dissolves by the heat and moisture of the mouth and serves as a vehicle for the gradual distribution and solution of the medicinal agent. A prolonged local effect is thus produced upon the surfaces of the throat and respiratory organs.

Pills.—Medicinal agents designed for slow solution and retarded absorption in the stomach and intestines. These are made into a mass with adhesive substances, gum, sugar, etc. (excipient), which, responding to the exception noted in relation to solution, permit the gradual solution of the mass, and consequently retard the effect of the medicinal agent. The complete solubility of a pill is of course essential in order to assure the desired action, and for this reason such excipient must be selected as will not react with the medicinal agent, so as to cause the mass eventually to become hard and insoluble. The essential property of a mass and therefore of a pill is a physical condition which will insure softening, then gradual disintegration and finally complete solution in digestive or intestinal fluids. A pill may be so hard as to be brittle (comp. cathartic pill) and yet be perfectly soluble, and again when so hard the pill may be almost insoluble in the liquids of the body. The salts are generally not adapted to the pill form unless mixed with extractive or saccharin matter as in the case of the compound cathartic pill, and compounds of mercury, antimony, etc. The salts of the alkaloid are largely administered in this pill form and may become quite insoluble in course of time. Even the substances mostly used as excipients, sugar and gum, while inert therapeutically, it must be remembered are not chemically inactive and may produce compounds more or less insoluble upon change and exposure. This is true in a greater degree when two or more chemic agents are combined in a pill. For example, bismuth subnitrate and calomel made into a mass with mucilage or glycerite of starch affords a pill which, upon standing, becomes as hard as cement and entirely insoluble. Reactions take place between chemic substances like these, no matter how carefully selected the excipient, which either impairs their solubility or renders them otherwise unfit for therapeutic uses.

The medicaments adapted to the pill form administration may be said to comprise the following:

Tonics, hematinics, stomachics, hepatics; purgatives, laxatives, cathartics, anthelmintics; ecbolics, emmenagogues, antispasmodics; antigonorrheal, aphrodisiacs, antiaphrodisiacs.

The medicinal agents adapted to the troche or tablet form of medication are confined to the following:

Astringents, antacids, aromatics; expectorants, pulmonary sedatives; demulcents, emollients, vermifuges.

Powders.—These comprise by far the greatest number of remedies, but the following are chiefly represented by this form of medication:

Emetics, diaphoretics, sialogogues; sedatives, narcotics, hypnotics; tonics, antiperiodics, antipyretics.

The objection to powders is the disagreeable taste of many remedies. Since this has been overcome by the use of cachets or konseals it leaves in this modified form powders as the most elegant form in which a very large class of remedies may be dispensed. It enables the physician to formulate his own prescriptions instead of prescribing ready-made combinations, and also affords the pharmacist the opportunity to practice his art for the preparation of medicines.—Read by C. S. N. Hallberg, Ph.G., at the Forty-fourth Annual Meeting of the American Pharmaceutical Association, Montreal, Aug. 15, 1896.

Reduction and Fixation of Fracture of the Zygomatic Arch.—Dr. Rudolph Matas describes his method in a case of fracture without laceration of the overlying tissues: As the injured area was extremely sensitive, a general anesthetic was administered. The usual antiseptic precautions were carefully observed. A long, full curve (semi-circular) Hagedorn needle, threaded with silk as a carrier, was made to penetrate the skin about one inch above the midpoint of the displaced fragment, and was carried well into the temporal fossa under the broken bone. Then the point of the needle was raised and made to emerge about half an inch below the lower border of the broken arch. As the needle was pulled out a strong silver wire about one foot long was attached to the silk carrier and dragged through the tract of the needle so as to form a metallic loop under the misplaced bone. By twisting the ends of the wire together, a loop was formed which permitted strong and easy traction to be made on the broken fragment. Traction was begun by pulling directly upward and outward. The displaced fragment yielded and instantly returned to its normal position with a snap. The contour of the arch was immediately restored and the displaced fragment showed no disposition to relapse into its abnormal position. Notwithstanding the apparent permanency of the reduction, it was not deemed prudent to trust the fracture without a more permanent support, and the following simple plan was adopted to secure permanent fixation: An ordinary glass slide of the kind used for mounting microscopic sections, after careful sterilization, was wrapped in a layer of iodoform gauze and placed over the seat of the fracture with its greatest length corresponding to the long axis of the zygoma. The slide was long enough to rest upon the malar prominence anteriorly and upon the temporal root of the zygoma posteriorly, thus resting upon two fixed points. After twisting the wire firmly over the splint, it was evident that the bone could not be displaced. The dressing was then completed by applying a layer of sterilized gauze and absorbent cotton over the slide as a dressing, the whole being held in place by a roller head bandage.

On the second day following the reduction, a thin shell of vulcanite or dental rubber, molded to the shape of the normal zygomatic prominence, was prepared by a dentist and substituted for the glass slide. The wire which held the fragment in position was not removed, but twisted over the vulcanite shield. The new splint was now covered with a layer of absorbent cotton soaked in flexible collodion and applied without any additional dressing. The patient was confined to his room only twenty-four hours. On the ninth day the wire, splint and all dressings were permanently removed. There has been ever since (about fifteen months), a total absence of scar, deformity or inconvenience.—*New Orleans Med. and Surg. Jour.*, September.

Physiologic Study of the Uterus.—Keiffer's thesis on the uterus is winning him honors at home and abroad. It is based on the most extensive and thorough research-work, with the myograph and manometer on dogs and other animals. He states as the results of his experiences: 1. That the uterus in dogs contracts under the influence of central and peripheral excitation of the median, crural and sciatic nerves. Also of the parietal and visceral peritoneum, and of the pelvic organs. Also of the vagus, both central and peripheral. Also of the direct excitation of any point of the genital apparatus. 2. The crural nerve can suspend, by reflex action, the tonicity of the uterus. He has observed, in fact, remarkable relaxation of the uterus caused by exciting the central and terminal segment of this nerve. He explains this fact by the inhibiting influence exerted by the spinal cord on the uterus, and pheripheral excitation of the crural nerve, sets this influence in play. 3. The pneumogastric nerve is not a direct excito-motor of the uterus. Frank has already established this in regard to the bladder. But Keiffer found that excitation of the central end of the pneumogastric produced a most active response. The action is therefore, reflex. There was no response to excitation of the central end of this nerve after section of the spinal cord at any point in the dorsal or lumbar region. Hence centripetal excitation of the pneumogastric must act through the mediation of the motor centers in the spinal cord. Every excitation of the peripheral end of the vagus invariably produced very decided curves. But if sufficient atropin is administered to the animal to inhibit the suspension action exerted on the heart by exciting the vagus, with the accompanying modifications in arterial pressure, or if sufficient chloroform is given to extinguish the reflex sensibility of the vagus, there is no motor reaction, not even when the strongest electric stimulus is applied. 4. Asphyxia causes tonic contractions of the uterus by the action of the asphyxiated blood on the lumbar genito-spinal centers. In all of Keiffer's experiments, arresting the respiration produced extreme constrictive muscular activity in the uterus. As soon as respiration became reëstablished, the muscular activity subsided to normal. This phenomenon does not appear after destruction of the lumbar portion of the spinal cord. 5. The cervix uteri is a true sphincter like the other muscular rings of the body, but resembles most the iris. There is no antagonism between the muscular activity of the body and that of the neck of the uterus, but both combine in a succession and combination of movements to produce the maximum effect in shortening the uterus and dilating its outlet. The cervix as it opens obeys the suspensive action of its circular sphincter, but also and principally, the constrictive action of its radiating fibers, and a longitudinal constriction of the vagina and of the body of the uterus. 6. The tonicity of the uterus is maintained by the reflex activity of the lumbar portion of the spinal cord. 7. The tonic center seems to be located in the dog, on a level with the principal part of the fifth lumbar vertebra. 8. In the coördination of the muscles of the body and of the neck of the uterus, opposite effects may be produced in one or the other of them, at the same time, and by the same excitation. 9. The pneumogastric is not an excito-motor nerve, nor a direct moderator of the uterine sphincter. 10. Asphyxia contracts the cervix; then relaxes it. 11. Acute anemia produces complete relaxation of the cervix uteri; transfusion produces constriction. The proof that the tonicity of the cervix is maintained by reflex activity proceeding from the spinal cord, lies in the following facts established by these experiments: 1. That the cervix can support a pressure indicated by a column of liquid that varies with the excitation, if the cord is intact. 2. That the height of this column, and consequently the amount of pressure supported, can be increased or diminished at will by exciting the lumbar portion of the cord (fifth lumbar vertebra). 3. That destruction of the spinal cord in the vicinity of the fifth lumbar vertebra paralyzes the cervix to a greater or less degree. 4. That destruction of the region of the spinal cord below the fifth lumbar vertebra completely abolishes the sphincter function. It even

relaxes the entire uterus. 5. It is probable that this point in the spinal cord corresponds in the dog, to Budge's genito-spinal center, which varies in different animals. In conclusion Keiffer seeks to establish an absolute physiologic similitude between the uterus in mammals and the human uterus, basing his statements on the development of the embryo, and on a long array of clinical facts which confirm what he has learned in his experimental investigations.—*Annales de la Soc. Méd.-Chir. de Liège* for July.

Success of Ichthyol in Tuberculosis.—The efficacy of ichthyol in the treatment of whooping cough, ozena, urethritis, etc., has been announced in these columns, and the *Journal de Méd. de Paris* of August 9, now adds an enthusiastic recommendation of it as an effective weapon in our struggle with tuberculosis, the first article which has appeared in France, although Scarpa, Unna and Cohn have been advocating it for some time, with a record of 300 cases treated. The writer is Le Tanneur of the Belleville Consumption Hospital and Dispensary. He describes his experiments to determine the antiseptic power of ichthyol, and states that absolute sterility is secured with 5 per cent., although the shape of the Koch bacillus is altered and its development much retarded at 2 per cent. and even less. He administered it to his patients in capsules (Chiron's) 0.25 centigram each, from four to twenty-four a day. No effect was observed under six to eight capsules. He commenced with two and increased to twenty per day, taken three times a day, during the meals, but there is no necessity for so much caution now, as none of the fifty cases treated ever showed any inconvenience from its use, and several cases of complicating diarrhea and gastric disturbances were found to be cured by it. The cough was much improved owing to the liquefaction of the sputa produced by the ichthyol, which also cured the congestion of the bronchial tubes. The color of the expectorations changed from green to yellow, then to gray, and finally to the ordinary color of mucous secretions, a long stride toward recovery, even in the minor point that they ceased to cause gastric disturbances when swallowed. The dyspnea is relieved at once by the liquefaction of the sputa and the decreased congestion, which rests the heart and raises the general tone of the system. Pain in the intracostal region is also much relieved, probably for the same reason. The general health does not show improvement as soon as with hypodermic injections of guaiacol, but it arrives and progresses none the less surely, and the patients gain flesh much more than with guaiacol. Several gained seven to eight pounds in the first month, others four, and two-thirds of the cases showed marked increase in weight. The sweats also diminished, but apparently only as the general health improved, as this effect was not noticed as promptly as with creosote or guaiacol. The appetite was not unfavorably affected as frequently by guaiacol, but was improved and restored to normal in many cases. One of the ten observations he records was a man of 41. Primary tuberculosis, coughing and expectorating for four years, without relief from creosote or any remedy. Fever 102 degrees every day. Dullness at the upper part of both lungs. Gained six pounds in one month of ichthyol treatment. Coughs only in the morning and "feels strength and respiration returning." Another, 67. Bronchial catarrh for thirty years. After one month of ichthyol treatment cough entirely gone, and "feels better than ever." Another, 35. Advanced case of tuberculosis. Strength entirely gone. After one month, "Aspect of astonishing health." Coughs less than a quarter of what he did previously.

Le Tanneur concludes by stating that while ichthyol is by no means the long-sought specific for this terrible disease, yet great benefit is derived from its use as a substitute for creosote and guaiacol when, as so often happens, the system has become so habituated to them that they fail to affect it. It is especially indicated in bronchial tuberculosis, which it most promptly relieves. Its disagreeable odor renders the use of the capsule imperative.

PRACTICAL NOTES.

Success of Serum Treatment of Oriental Plague.—A telegram from Yersin announces that he has succeeded in curing twenty-five out of twenty-seven cases of the bubonic plague with his anti-plague serum from his laboratory established in Annam a year ago. The usual mortality is 95 per cent.—*Bulletin Méd.*, August 12.

Thermotherapeutics of Gonorrhea.—Neisser has stated that the gonococcus loses its power of development at a temperature of 113 degrees. Callari has found that the normal male urethra will bear tqis temperature and the female two degrees higher. He has been treating gonorrhea with injections at 113 degrees and reports a progressive disappearance of the gonococci in the majority of cases with this treatment. In order to avoid unnecessary congestion, he injects a 6 per cent. solution of cocain ten minutes before.—*Gaz. degli Osp. e delle Clinic.*, August.

Successful Treatment of Ozena with Ichthyol.—It is reported from Vienna that ichthyol will cure the fetid breath in ozena more rapidly and permanently than any other known remedy. After washing off the crusts with tepid water, two or three syringes of a 2 to 5 per cent. solution of ichthyol are injected into each nostril, the head held well forward and the mouth open to avoid swallowing the liquid. The rhino-pharyngeal mucous membrane is then swabbed with a cotton wad dipped into a 25 to 30 per cent. solution of ichthyol. It is also stated to be the best treatment for dry pharyngitis, with or without complicating ozena.—*Sémaine Med.*, August 12.

Fragrant Antiseptics.—In cases of foul smelling cancers, etc., the odors are completely disguised if the room and bed are well sprayed with a mixture of alcocol, 500 gr., essence of thyme and essence of lavender, 50 gr. each. This agreeable disinfectant also possesses powerful antiseptic properties. Huchard recommends a similar antiseptic spray for the apartments of tuberculous patients: guaiacol 50 grams, eucalyptol 40, phenic acid 30, menthol 20, thymol 10, essence of cloves 5 and alcohol at 90 degrees, q. s. to make one liter.—*Gaz. Méd. de Liège*, August 20.

Hypodermic Alimentation with Saccharin Solutions.—Some recent experiments at Munich with persons in normal health prove that artificial alimentation is possible in this way. Dextrose, levulose and maltose injected in a 10 per cent. solution were entirely assimilated by the organism, while cane or grape sugar were rejected and eliminated *in toto* by the kidneys. The slight pain that followed the injections was cured by massage. The best method of making the injections is to use a glass receptacle with a rubber tube and T-shaped canula. A needle is inserted into each branch of this canula, so that an injection can be made into each thigh at the same time, and a whole liter injected in fifteen or twenty minutes. The amount was increased progressively from 100 to 1000 c.c. Former experiments at Würzburg failed of success probably because the solutions were too strong.—*Semaine Méd.*. August 12.

Treatment of Syphilis with Mercuric Iodid Hemol.—As this is the only preparation that contains iron, its use is indicated whenever a tonic action is desired. It is effective and simple, although no internal medication takes the place of frictions and injections. Rille reports thirty-seven cases he has treated and eighteen from Neumann's practice. A few slight transient inconveniences followed its use occasionally, but they were less than with any other internal medication. He administered it as follows: 10 grams Kobert's mercuric iodid hemol; 0.8

decigrams opium powder, and q. s. licorice powder; made into fifty pills; taken two or three times a day, after meals. He recommends it for anemic and scrofulous cases of syphilis.—*Annales de Derm. et de Syph.*, July.

What is Indicated by the Tongue.—A white tongue, according ing to Dr. Ardhill, indicates febrile disturbance; a brown, moist tongue, indigestion; a brown, dry tongue, depression, blood poisoning, typhoid fever; a red, moist tongue, inflammatory fever; a red glazed tongue, general fever, loss of digestion; a tremulous, moist and flabby tongue, feebleness, nervousness; a glazed tongue with blue appearance, tertiary syphilis.—*Pop. Science News*, August.

New Method of Preserving Specimens with the Original Coloring.—Some preparations a year old were exhibited recently at the Académie de Médecine by Melnikoff-Rasvedenkoff of Moscow, which appeared as fresh and perfect in their coloring as if they were only a few hours old. According to this new method the fresh organ is placed in formalin, an aqueous solution of formaldehyde at 40 per cent., which toughens and discolors the tissues. At the end of twenty-four hours the piece is transferred to alcohol at 95 degrees, and left six to eight hours. In this bath the organs recover their previous coloring and the blood a tint as if the vessels had been freshly filled. The piece is then placed in an aqueous glycerin solution of potassium acetate. (Acetate 30, glycerin 60 and dist. water 100.) This sets the color permanently. After this it is removed to the final preserving fluid, made by boiling together 100 grams of gelatin and 600 grams of water, to which are added 350 cubic centimeters of solution of potassium acetate. After filtering this through a double filter, 700 cubic centimeters of glycerin are added, and the process is complete.—*Bulletin*, August 4.

Actinomycosis of the Lower Jaw.—Ducor of Paris reports a case of an enormous tumor on the lower jaw, with great emaciation and general distress. The patient belonged to the upper classes and submitted to treatment from twenty surgeons, during eight years before a correct diagnosis and relief were obtained. Ducor suspected and established the presence of the ray fungus, and secured great improvement with potassium iodid, 2.5 grams per day, painting the intra-buccal surface of the tumor with tincture of iodin, and injecting it into the parenchyma, mixed with equal parts of glycerin. Potassium iodid in this case again, showed itself the specific remedy for actinomycosis, although the lesions were of too long standing to expect complete recovery. There is no doubt that this disease is far more frequent than is generally supposed, but fails of recognition, so that the possibility of actinomycosis should be borne in mind in any tumor of the jaw. In this case it was found that the patient had the habit from her youth of chewing grains of wheat, etc., and picking her teeth with the stems. See this JOURNAL, July 11 and 25, pages 98 and 226.—*Bulletin de l'Académie de Méd.*, August 4.

Treatment of Malarial Splenic Troubles with Oleate of Rue and Cyclamen.—In a communication to the *Gaz. degli Osp. e delle Clin.*, August 9, Colasuonno remarks that physicians in Italy have especial opportunity to observe the effects of malaria, and that he has had a wide experience in treating splenic disorders, which are the most important manifestation of chronic malaria, as the spleen is not only the chief seat of the localization of the active agents of the disease (Maragliano), but owing to the frequent hypertrophy produced, it causes a series of ills, especially if the organ becomes displaced. He then proceeds to announce with confidence that he has established the efficacy of a combination of oleate of rue and cyclamen roots as a remedy for malarial splenomegalia, and has even secured complete recovery in a case of wandering spleen. This was a woman of 40 who came to the hospital at Naples to have an operation performed, as the enormously hypertrophied and displaced spleen caused by chronic malaria was producing intense gastric disturbances. Instead of an operation the region was frictioned five to ten times a day with the oil of rue and cyclamen. At the end of a month of this treatment the spleen had been reduced to its normal size and position, and has remained normal during the seven years since. He used equal parts of crushed cyclamen roots and oleate of rue made from the leaves, which he has well rubbed into the region, with massage.

Ununited Fracture—Use of Bone Ferrule.—The patient sustained a severe fracture of the humerus some months ago as the result of a gun-shot wound. There was great loss of the shaft of the bone with paralysis of the musculo-spiral nerve. The case had been operated upon on the Pacific Coast, at which time several fragments were removed and the remaining ones wired together. Unfortunately there was no attempt at reunion. On April 2, we operated upon this case and found that there was great longitudinal diastasis of the fragments of the bone and also those of the nerve. The fragments of bone were freshened obliquely and a bone ferrule slipped over the point of their approximation. These ferrules are made from the femur of an ox and have been but partly decalcified. The distal end of the nerve was easily found in this case, while the proximal end was found with great difficulty. After succeeding in finding it, however, we sutured the ends and surrounded the point of union by muscular tissue, in this way preventing the implication of the line of union of the nerve with the cicatrix of the bone. At the point of the fracture we now find considerable definitive callus. The ferrule has taken the place of the provisional callus. We have every reason to believe that this case will soon recover. I know of no more effective way of uniting compound fractures, whether primary or secondary, than that by means of fixation with bone ferrules. The limb was dressed with a simple right angle splint, held in position by a plaster of paris dressing, which included the shoulder. The bone ferrule will be absorbed in from six to eight weeks.—Dr. Nicholas Senn in the *Clinical Review*, September.

Veratrum Viride in Puerperal Eclampsia.—Dr. C. D. Hurt says: Veratrum viride is a nervous sedative, a muscular relaxant, a glandular excitant. When taken into the system it lessens the susceptibility of the sensory nerves, and modifies the action of the spinal cord and vasomotor nerves. At the same time, if coma exists it has a property of removing it and restoring the mental functions. Other remedies for puerperal eclampsia have their places, and some of them are valuable; but no one meets all the indications as does veratrum viride. Taken internally chloroform acts as a sedative narcotic, operating chiefly through the nervous system, independent of vascular action or congestion or without any beneficial influence on the latter condition. Veratrum is a sedative, operating through the nervous system, relieving coma, and removing congestion, and eliminating certain effete matters by stimulating the secreting organs. Bromid of potash and chloral are too feeble, unreliable and slow in their action. Morphin stupifies, lessens pain, but is objectionable in locking up the secretions. Apomorphia produces greater distress with fewer good effects. Venesection is admissible in all robust patients or cases of plethora, by removing a certain amount of effete matter from the system and encouraging easier and more rapid dilatation of the os. Indeed, with venesection and the judicious use of veratrum there is no condition of the os not dependent upon actual stenosis which will not yield to parturient pains and avoid the necessity of incising—a surgical dexterity into which some obstetricians are easily tempted. Veratrum is suited to the treatment of eclampsia, whether ante-partum or post-partum, unless chronic disease or excessive anemia be present.—*Atlanta Clinic*, August.

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SATURDAY, SEPTEMBER 12, 1896.

JANUS.

The name of the two-faced Latin deity has been given to a bi-monthly journal, the first issue of which, for July and August, 1896, has just reached this continent from its headquarters in Amsterdam, Holland. JANUS looked backward as well as forward that he might have ever in view the lessons of the past for his guidance in the uncertainties of the present, and he is thus made to symbolize the intentions of the Editorial Staff of this new undertaking in medical literature, the "Archives internationales pour l'Histoire de la Médecine et la Géographie médicale," or rather this attempt to resuscitate, under the conditions of the present day, an undertaking which failed under those of half a century ago; for although to many this *Janus* is a new thing, to those who are versed in the archives of medicine it is *Janus Redivivus*. This is shown in an enthusiastic introductory paper written by Professor STOKVIS of Amsterdam, at the request of M. le Directeur Dr. PEYPERS of the same city, who modestly characterizes himself as too little known out of his immediate circle to be the proper accoucheur for an international journal.

Fifty years ago, that is in 1846, an era of extraordinary progress dawned upon medical science. The heavy chains of the philosophy of the age, with which the natural sciences, together with the science of medicine in Germany had been riveted, were broken forever. The microscope and other new appliances for physical research, with newly discovered chemic methods, led to a return to experiment and careful observation. Hypotheses and systems were rejected, while facts developed by the methods of natural science conduced to the recognition, one after another, of many hitherto unknown biologic phenomena of the greatest importance to the science of art and medicine. The cell was already appreciated as the primitive element of life. HENLE had already published his Anatomy, in which he continued the immortal work of BICHAT. The predecessors of PASTEUR in following the light of SCHWANN and HELMHOLTZ had already shown that fermentation is a vital process which ceases as soon as the conditions needful to the life and development of the microörganism are withdrawn; and the medical world was on the verge of the discovery that every special fermentation is determined by a specific microörganism, and that those of the alcoholic, acetic, lactic and butyric fermentations, are distinguished one from the other, not only by their function, but by their form. At this time medicine became permeated with new blood. The fruits of the genius of CORVISART, of LAENNEC and of CRUVEILHIER, had been planted, improved and propagated by SKODA and ROKITANSKY of the school of Vienna. HENLE was preparing his Rational Pathology. CLAUDE BERNARD, who unveiled so many of the mysteries of animal and vegetable life, was already close to his discovery of the glycogenic function of the liver. The brothers WEBER had just announced the first illustration of an inhibitory nerve. TRAUBE was beginning his beautiful series of researches in experimental pathology, and VIRCHOW, the grand master of our modern pathology, revealed in this year the pathogenesis of fibrin in the vessels, of embolism of the pulmonary artery and of leukemia.

In the midst of this era of progress the original *Janus* was started by HENCHEL of Breslau, aided by many foreign collaborators. It may be observed that a number of National Archives had been launched before this, and had foundered because one country alone was unable to sustain a historic review on the paying basis of a practical journal, just as at present it is claimed that one country alone, even though that country be the United States of America, can not maintain a minor metal on a parity with a major metallic element. Even HENCHEL'S international effort failed. The medical world was too busy looking forward to have time to look behind in this formal way. *Janus* failed in 1848, but its editor, aided by HEUSINGER of Warbourg, and others, reëstablished it in 1851. Despite, however, the enthusiasm of a few, it again failed, because the active members of the profession took but little interest "in the important papers on the history of medicine and medical geography which it contained."

Now, in the year of 1896, when, as in 1846, the medical world is on the qui vive for fresh developments, *Janus redivivus est*. Will it succeed? Have

we time to look back? Do we need to look back with full face? Few systematic articles in this JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION fail to bring their subjects up from ancient times to date. This testifies to the use made of our medical libraries. Is this enough, or do we require a new and special journal? All sorts and conditions of men make up the world, and all sorts and conditions of minds make up the medical world. The energetic, enthusiastic workers are in advance on the skirmish line; but should there not be cautious, conservative minds surveying the pathways which led to the present position, the better to indicate those which should be pursued for final triumph? We think so. We think that *Janus* has a mission; for when we find among many notable European names on the Editorial Staff those of PEPPER, OSLER and STERNBERG, and among the collaborators the names of N. S. DAVIS and NICHOLAS SENN, of JACOBI, of New York, and of HARE and GUITERAS, of Philadelphia, we must conclude that the International Archives will prove their value and meet that success under the conditions of the present age which was denied them half a century ago.

"THE NEW NURSE" AGAIN.

Being a woman, it follows that in the universal process of rejuvenation and modernizing to which everything is to be subjected the nurse must also be made over. It might seem that the professional nurse were herself such a modern product that any remaking after the manner of the new woman, would be a wholly superfluous proceeding. But in England, at least, protest has apparently become necessary, and we suspect it may be about time for Americans to reconsider the questions of over-education or mal-education, proper functions and delimitations of the nurse. Dr. MALCOLM MORRIS in *The Practitioner* for July, 1896, has some rather sarcastic remarks upon the subject. To us at least, and pondering the matter from our point of view, Dr. MORRIS seems to be somewhat too ironical. Perhaps the dreams and ambitions of our American girl are kept well *in petto* and are only awaiting power and greater storage to break into the expression which has piqued the transatlantic editorial pen. Doubtless American gallantry would have been slower to snip or snub the nursoreal ideal or tendency. We are proverbially more generous to our sisters than the nation which has labored so long and only at last half successfully to permit a deceased wife's sister to cast sheep's eyes at the widower of her defunct sister. We may be too impulsive but our generosity is equal to permitting the deceased wife's sister the freest privileges and ambitions.

But surely she is a better nurse than any man, and we are all happy to acknowledge that these modern doctoring days are much easier for us, and the prognosis in the patient's case is far better than it was before we had the nurse's beautiful conscientiousness, and gentle patience to aid us. Dr. MORRIS even denies the fact which we thought so true and well-recognized as to be pure platitude, that the presence of the young women in the wards and private rooms of the hospital has been the principal and persistent cause of a decided improvement in hospital manners, student brutalities and vulgarities, and even in professional characteristics. "The type of Bob Sawyer was extinct long before the 'lady-nurse' came upon the scene," he says and otherwise dashes the poor girls with the quintessence of his irony, ending up with the wild lunge that the softening of manners is due more to "the fear of the examiner" than the subtle influence of the nurse. In all of which we fear the Englishman has let his prejudice get the better of his generosity and courtesy. We believe no American physician would for one moment deny that not only in the past but in the present time the whole atmosphere of the ward and clinic is purified of the former vulgarity and rowdyishness by the silent presence of "petticoats," the white-capped priestesses of dignity and purity hovering about, dextrous in service, and often as powerful in influence when they only "stand and wait."

The only fear we have as to the matter of "over-ambition" and "over-education" of nurses concerns their physical and neurologic ability to do their work, and receive and digest the scientific food they seem both willing and eager to have given them. If they could safely do so, we do not see why they should not have all the lectures and examinations on "surgical anatomy," or upon any other subject related to their calling, they are pleased to desire. But precisely this doubtful "if" gives us pause. We feel like finding a way out by lengthening the course of study or apprenticeship so that there shall be greater freedom, or at least some little relief from the frequently frightful and inhuman over-work and over-worry of their schools. This is certainly easy of accomplishment, because now there are so many girls wishing to enter the schools that, by reason of the greater numbers possible, the hours of work might be shortened and the drudgery lessened. In this way the standards of character and acquirement could be raised without endangering the health. We have no such fear as seems to glare at one from between the lines of our English contemporary, that any one, even a nurse, can be too highly educated for the most menial occupation. We have no tendency, thank heaven, to look upon the nurse as a menial or as a servant. It is rare indeed that one will hear an American physician speak to a nurse in a harsh or dictatorial manner, and as if she were a common maid-of-all-work.

There is one aspect of the nurse question to which we have seen no allusion in any of the controversies, and which may deserve a passing word.

Women are natural politicians, born partisans, good in execution and obeying, poor in leading and ordering. It is proverbial that the worst enemies of some women are other more fortunate or shrewder women, and that in stores or factories the harshest and most unkind "heads of departments" or "bosses" are those women who are put in authority over other women. From all this it results that instances have been known in which the chief nurse has been an inexhaustible fountain of trouble and injustice. In the first place, she is almost certain to have a favorite doctor or two, and to be as "hateful" and intriguing toward others she does not like, as she is more than kind and intriguing toward her favorites. Worse than this, her partisanship is almost certain to be hotly active in the matter of favoritisms and antipathies to the girls who must be as tools in her hands. She gives her favorite doctor her favorite nurses, and to the unfortunate whom she detests she allots the poor child who has justly or not incurred her ill-will. No one so keen as she to find symptoms of "nursitis" in the medical student or young resident physician, and to trace the infecting *materies morbi* to its source with a certainty and celerity any bacteriologist might envy. In the legal manner of speaking, justice is liable to fall with an all too heavy hand upon the weaker party. It has been also whispered that at times she allows herself a greater freedom in the matrimonial game than she gives her competitors, and that wily and subtle-minded physicians have made use of the favor of the chief nurse to further the getting of patients, the delivery of lectures, and other ways of self-seeking forbidden men of greater self-respect. However all this may be, it would seem well not to allow too much autocratic power and authority to her ladyship until it shall have been proved, by some fifty years of service, that she will not use it except justly among the poor voiceless creatures with whom she has such numerous and devious means of unjust subjugation or reward, or as relates to the hardly more important matters of professional life or therapeutics.

THE LOWERING DEATH RATE

There is certainly no more astonishing and gratifying fact in modern civilization than the enormous decline and still progressively decreasing death rate of the more progressive and best governed countries. We have in England a proof of the fact which, owing to the length of time over which they extend, and the accuracy of the statistics, brings the result clearly before the mind. Estimated by quinquennial periods the general English death rate per 1,000 from 1858 to 1895 was as follows: 22.22, 22.58, 22.42, 21.96, 20.79, 19.40, 18.90, and 19.04 respectively. In London alone, the largest civilized city in the world, the rate has been reduced to about 17, while certain districts of the metropolis have reached as low a rate as 14, 13, and even 12.

In the United States, with less concentration of population in large cities, we must confess the shameful fact that human life is more recklessly and needlessly sacrificed to the brutality of politics and sanitary heedlessness than in older countries. It is nothing less than a disgrace that in our smaller cities, and with the injuries of bad hygiene less necessary, we yet are killing off our citizens at the rate of from 5 to 10 per 1,000 faster than in European cities. Think of what this means in a city the size of greater New York! If her death rate is 5 per 1,000 greater than it need be, one shudders to contemplate the many thousands of citizens needlessly murdered every year.

In some of our cities the condition makes this fact still more evident and startling. Accurate figures are not before us as we write, but we believe that in a number of moderately sized cities the death rate has been reduced to a remarkably low figure. It has lately come to our notice that in one of our cities, Buffalo, by the persistent and heroic labors of the energetic health officer, the rate has been reduced to 11.67. If we are not mistaken, this is the lowest ever made by any city of the world of equal size. If the saving of one life is worthy of medals and public honors, what kind of medals and honors should be awarded to Dr. WENDE for the thousands that are living in that city to-day, who under a less thoroughgoing sanitary management would have died? And, on the other hand, what rewards should be given other cities where the death rate is double that of Buffalo? Perhaps their problems have been harder and the difficulties more insuperable, but perhaps, also, they have not. Leastwise, they have not been so proportionately to the contrast in the death figures.

Buffalo's death rate in the year preceding Dr. WENDE's accession to the office of Health Commissioner (1891) was 23.48 per 1,000 population; prior to that it had averaged above 20 per 1,000. In 1892 the rate was reduced to 19.98, to 19.03 in 1893, to 16.76 in 1894 and to 13.95 in 1895. For the first six months of 1896 the rate is 11.67, with prospect that the year will see it not far from 12 per 1,000.

All physicians know the essential prerequisites of such a reduction of disease: A reorganization at once upon a thoroughly business-like and scientific basis of the health department and the stamping out of the causes of disease. In Buffalo the immediate reporting of cases of contagious disease by telephone was made mandatory; visitation and vaccination in the public schools instituted; the sealing up of an emergency inlet of sewage-polluted water supply followed. Weekly examinations of the water are continued to this day; a thorough and watchful reorganization (with prose-

cution of delinquents) of all the conditions surrounding the milk supply was made; food and drug inspection; tenement house inspection; a justly tyrannical oversight of all drainage, plumbing, etc.

It must not be forgotten, also, that the death rate alone does not represent the expense either in suffering or dollars to the community. Dr. FARR estimates that for every death there are on the average two years of illness in a given community. It is needless to emphasize the tremendous significance, to those with open eyes and humanitarian feelings, of the thousands of years of prevented illness and suffering, shown in the foregoing figures.

There are many lessons to be gleaned from these figures, but there are one or two that we can not omit to notice:

1. In a general way it can not be denied that this, the greatest good that has been brought to humanity, is in the main due to medical science, and to the virtue of medical men. Either in the long historic series of preparations for the realization of the endeavor, or in actually and practically working it out, or in both, the medical profession has undoubtedly been the chief instrument. Without undue self-satisfaction we may lay no little emphasis upon the fact and justly claim that although our work is with disease, and our wage drawn from the conflict with disease, yet there is not one lay citizen more glad, probably none so genuinely happy as we, that we are stamping out disease and death. Surely few or none are so unsatisfied with the result, grand as it is, and so resolutely determined to go on and make the blessing still greater. We have reduced the death rate in the last twenty-five or thirty years, of smallpox from 219 to 22 per 1,000; of typhoid fever from 373 to 135; of typhus fever from 81.4 per million to 2; of phthisis from 2,565 to 1,512, and so on. As to scurvy, leprosy, the plague, cholera, malaria, etc., they are fast becoming mere names in the history of medicine. But is the community grateful? Witness our half failures, and half successes, with more absolute failures, to wrench from the public even the simplest essential medical practice acts! The public loves its quacks far more than it does us.

2. And what is this precious public for whom we labor, not only not doing for the elevation and protection of the profession, but what is it doing for its own sake, more directly, in founding and supporting bacteriologic and hygienic institutes, boards of health, etc? If we had the money wasted on paper cutters, pocket books, and luscious luxuries by our legislators we could pay the expenses of a dozen such institutes and save the lives of a hundred thousand people in a few years. Suppose even we could have a few of the millions now given as bribes to fraudulent pensioners! This public can endow theologic schools and chairs to teach boys Hebrew, Latin and Greek, etc., but where is the endowment to be found to endow medical colleges or chairs where shall be taught the saving of life?

3. Not only may we complain of not being helped, but we have to fight against opposition. Take the crying abuse of turning a medical Health Officer out of office in obedience to the criminal demands of "practical politics." The place-hunter and spoilsman must have his turn regardless of the community's health and rights. The term of office of an Officer of Health should and must be made unlimited and solely dependent upon success and capacity. It is simply disgusting that just when the year or two of experience has begun to fit a man for the efficient discharge of his complex duties, he should then be turned out to make way for a novice.

EDUCATIONAL NUMBER.

For the convenience of students, and the information of the profession generally, we shall issue an educational number next week. It will be seen that in the last decade, gigantic strides have been taken in bringing up the average standing of the medical colleges. The increase in the facilities for laboratory instruction is one of the gratifying features of the new exhibit.

There are many alleged medical schools not accounted for in this exhibit, but as a rule they ought not to be considered. We have been informed that there are about fourteen medical schools in Chicago alone; only a few of these have any reason for existence, and if rigid requirements were insisted upon they would close their doors.

The struggle for existence is at the root of the evil; finding themselves unable to compete with the real college professor in obtaining practice from the public, these persons, with others of the same ilk, start a so-called medical college, and become "professors" themselves. There are few statutory requirements; an act of incorporation can be obtained for a silver dollar in any stage of depreciation, a building rented, and a flaring sign put across its front. Verily, the "professors" are as plenty as the leaves of Vallambrosa. If we look into the equipment of these raw institutions, we find the Laboratory wofully lacking in the most ordinary apparatus, and like Do-the-boys Hall, squalor and filth are the most prominent characteristics. The only wonder is, that such men, with such miserable equipment, can find students; but they flourish in some way. The cure for this evil will come when the real medical colleges have endowed chairs, and the professor no longer enters into bread-and-butter competition with the general profession. Then it will be possible by statutory enactment to prevent the establishment of improper and imperfectly equipped schools. It should be a simple thing for the legislature of any State to fix a minimum standard of equipment. If this were done the tone of the medical school would be much higher, and the profession generally better pleased with them.

CORRESPONDENCE.

Dislocation of Hip.

CLYDE, N. Y., Sept. 2, 1896.

To the Editor:—In looking up some of the literature relative to dislocations of the hip, I especially noticed the remarks made when reviewing the work of Dr. Allis relative to some difficulties attending the reduction of the same, and which I found in the JOURNAL of April 10 of this year.

My notice was especially attracted by them, as they reminded me of a case which came under my care in 1859, where the head of the femur was upon the dorsum, which I failed to reduce by every known means except that by Chapman (manipulation), afterward revived by Dr. Reid, which I did not try. Dr. Reid was then a resident of Rochester where, as now, was also the home of "our own" Moore.

When obliged to give it up, and having visions of a suit for malpractice (as the accident was in a poor family), I sought the aid of Prof. E. M. Moore to help me out of my trouble. He in his goodness of heart not only personally came to my rescue, but also brought Dr. Reid with him, saying: "This is Reid's hobby, and we will let him reduce it by manipulation." After arriving at the house, and when everything was in readiness, Dr. Reid began his manipulations. After vainly trying for a long time he did not succeed, and gave up the reduction of it by what was then called his method, and requested me to apply Jarvis' Adjuster, hoping that with it it might aid in another effort by manipulation.

By this time the mercury was as high as it could conveniently climb in the thermometer, and all hands stripped as for a pugilistic encounter. Dr. Reid again renewed his attack and succeeded in changing the locality of the head from the dorsum to the thyroid foramen, where it is at this day, and where I have, from that time to this, wished the head of the young man was also, as he and his friends for a long time were unceasing in their denunciations of me, and even went so far as to consult an attorney. The attorney's reply, I afterward learned, was, "You can not recover against the Doctor with such men as Moore and Reid at his back." That ended all thoughts of prosecution, but not the vehemence of the young man's and his friend's abuse.

There was to me a gratifying sequel to this case which was this: Five or six years after the circumstances above related, a messenger came for me in great haste to visit a young man who had been thrown from a horse, and whose leg was thought to be broken. I visited him, not suspecting whom I was to see. I found a fracture of the femur at its lower third. As I was about to make preparations, the young man said, "Doctor, you have had something to do with this leg before," whereupon making some inquiries, I learned that he was the young man who had denounced me so savagely some years before. I rose from my chair and said to him, "Then you are the individual who, some years ago, was unremitting in your denunciations of me for not having done what two distinguished surgeons also failed to do. I am glad you have enlightened me. I would have reduced your fracture and done for you to the best of my ability, but I shall not place myself in a position for history to repeat itself. You must secure the assistance of another surgeon."

It was pleasing to me to hear him beg and promise that whatever the result might be, if I would assume the care of his case, he would never murmur. Another surgeon was called and what the outcome was I am unable to say, as he lived in another town, and beside that I never made an inquiry.

This communication is intended more especially to refer to the cause of our inability to reduce the dislocation, which cause was the one given by Professor Moore at the time, the "untorn portion of the capsular ligament," and he went so far as to say to the mother of the young man (she was a widow), "If you will let me take him to the hospital I will cure him by cutting down and liberating the head of the bone," but she declined.

This was thirty-seven years ago, years before antisepsis was thought of, and when, if I remember correctly, cutting into a joint was considered fatal so far as future use of it was concerned, if not fatal to the life of the patient. I well remember that on our way home Drs. Moore and Reid had a warm discussion relative to the propriety of the operation which Dr. Moore had urged upon the mother, the latter strenuously opposing it as it would be fatal. Dr. Moore would have made it, however, regardless of the amount of opposition which could have been arrayed against it, had he had the opportunity.

At this late day even, I don't forget how gratifying it was to me to know, poor as I was, that I was warmly sheltered under the wings of Drs. Moore and Reid, as suits for malpractice were much more frequent then than at the present day, for obvious reasons.

D. COLVIN, M.D.

Treatment of Phthisis Pulmonalis.

KNICKERBOCKER, TEXAS, Aug. 29, 1896.

To the Editor:—As a country doctor, debarred by semi-invalidism from leaving a dry and salubrious climate to drink fresh draughts of knowledge at the founts of learning perpetually flowing in every modern medical center, I derive no little satisfaction and mental profit from noting the progress of medicine as recorded weekly in our JOURNAL.

Having found that while in my own person the progress of pulmonary phthisis is satisfactorily arrested by climatic and hygienic measures, these nevertheless fail for obvious reasons to act so favorably upon many other invalids who resort hither, I therefore naturally feel a profound interest in every new therapeutic claim which relates to the treatment of consumption. Although somewhat skeptical of the confident claims advanced in behalf of every new treatment of phthisis since Bergeon failed and Koch fell short of success, I yet cherish the hope that with the onward march of medical progress, a greater measure of success than ever before lies just ahead of us. And, so, when experienced and eminent bacteriologists, like Dr. Paquin and Professor Klebs, offer a serum or a definite product of the bacteriologic laboratory scientfically prepared by experts and favorably reported on by clinicians, I am disarmed of my natural prejudice sufficiently to accept the scientific basis on which their preparations are claimed to act, and in selected cases to give them a trial. But when "A New Treatment of Phthisis," as presented by Dr. Hubbard Winslow Mitchell in the JOURNAL of August 15, prescribes a formula of simple chemic agents, supported by extraordinary curative claims based on two years' observation and an extensive list of cases treated, my old skepticism returns rampant on noting the indefiniteness of the composition of the "fluid" recommended.

In view of the magnitude of the claims made for a "fluid" composed of so simple ingredients, I wish to protest against the inexactness of the published formula, to which, after giving the list of chemicals entering into its composition (designated for the most part by unofficial terms) is appended the direction: "Sodic carbonate, potassic carbonate, equal parts added in sufficient quantity to bring the solution to the proper (*sic*) degree of acidity." In the name of suffering humanity, what does this mean? Let us suppose in the absence of a working formula for the preparation of this "fluid" that an experienced pharmacist shall possess sufficient practical technical knowledge of chemistry to prepare a .5 per cent. aqueous solution of chlorin, being guided in his efforts by the quantitative tests of the .4 per cent. official solution of the pharmacopeia, and then should fail to guess the exact quan-

tity of sodic carbonate and potassic carbonate required "to bring [Does he mean reduce?] the solution to the proper degree of acidity?" In the event of failure to secure the expected therapeutic results, would rural practitioners like myself, who live far from chemic laboratories, be expected to draw their supplies of this new "fluid" from an expert who prepares it under the immediate supervision of the author and inventor of the "fluid?" If not, why is a formula presented which would be compounded exactly alike by probably no two pharmacists out of a thousand, who might attempt to follow its directions?

It seems to me if the Doctor reports his discovery for the benefit of humanity and for the instruction of the medical profession, he should supply a plain working formula of the "fluid." But if it is to be made only by experts and under his own personal supervision, and is to be had on the market at so much a bottle, then the JOURNAL should send its bill to the laboratory for advertising, at regular rates.

BOYD CORNICK, M.D.

The Polish Physicians of Chicago.

CHICAGO, Sept. 2, 1896.

To the Editor:—I have the honor to announce to you, that on Aug. 29, 1896, the Polish physicians of Chicago organized in a society, to be known by the name of "Towarzystwo Lekarzy Polskich" (Polish Physicians' Society), and filed the articles of incorporation. The articles were signed by the following physicians: Drs. Ed. Czerniewski, M. Dowiat, M. Orglert-Kaczorowska, J. P. Kaczarowski, M. P. Kossakowski, W. Kuflewski, J. Piszczak, W. J. Sieminowicz, W. Statkiewicz, B. F. Strzyzowski and J. Ziolkowski, and Dr. R. L. Lande from Milwaukee, Wis.

The directors elected for the first year are: President, J. Piszczak, M.D.; vice-president, M. Orglert-Kaczorowska, M.D.; secretary and treasurer, W. Statkiewicz, M.D.

The purposes of said society are purely scientific.

Meetings will take place alternately at each member's home. The first regular meeting will take place at Dr. W. Statkiewicz's, 3315 Laurel Street, Chicago, at 4 P.M. on the 12th inst.

Very respectfully, W. STATKIEWICZ, M.D.

Pan-American Medical Congress.

To the Editor:—I expect to attend the Congress as delegate from the AMERICAN MEDICAL ASSOCIATION. Is it necessary to send my name and fee to the secretary general, City of Mexico?

G. B. G.

ANSWER:—Send your registration fee, $5 (gold), to Prof. Dr. Van Francisco Bastillos, Calle de Tabuca, No. 7, City of Mexico, Republic of Mexico.

BOOK NOTICES.

Twentieth Century Practice. AN INTERNATIONAL ENCYCLOPEDIA OF MODERN MEDICAL SCIENCE. By leading authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In twenty volumes. Volume VIII. "Diseases of the Digestive Organs." New York: William Wood & Co. 1896.

As was the case with Vol. VI, it has again been found necessary to issue the eighth volume out of the regular order. The publishers say Vol. VII will be the next to appear, upon the publication of which the series will be consecutive as far as Vol. VIII. The present volume has been prepared by eight different authors, four Americans and four Germans; is illustrated by 100 original engravings and includes diseases of the mouth, diseases of the esophagus, diseases of the stomach, pancreas, peritoneum, animal parasites, and diseases caused by them, and the treatment.

The contributors are B. Farquhar R. Curtis, New York; Max Einhorn, New York; Reginald H. Fitz, Boston; James M. French, Cincinnati; J. C. H. Huber, Bavaria; Warner Kümmel, Hans Leo, of Bonn, and Johann Mikulicz of Breslau.

The chapter on diseases of the mouth has been written by Mikulicz and Kümmel, and with the usual thorough manner of the Germans, we have it beginning with the anatomy of the parts. Fitz has written a chapter in a very satisfactory manner on diseases of the esophagus; Max Einhorn on diseases of the stomach. Naturally, we expected to see a good deal on the subject of gastroscopy, as no one in this country has given more attention to it than Dr. Einhorn. A good deal of attention has been given to different apparatus for lavage, and this chapter is well illustrated. The chapter on diseases of the pancreas has been written by Professor Leo and although short is very concisely written. The chapter on diseases of the peritoneum by B. F. R. Curtis is an excellent one and under this head the author has included appendicitis. The chapter on animal parasites and the diseases caused by them, by J. C. H. Huber, is a very exhaustive résumé of the subject.

The volume is fully equal to its predecessors, which is paying a high tribute to the general merits of the work.

Treatise on Surgery by American Authors FOR STUDENTS AND PRACTITIONERS IN SURGERY AND MEDICINE. Edited by ROSWELL PARK, A.M., M.D. Vol. I, General Surgery, with 356 engravings, 21 full-page plates in colors, and monogravures. Philadelphia and New York: Lea Brothers & Co. 1896.

This work, which has been announced for some months, has been issued. The contributors to the volume are W. T. Belfield, Herbert L. Burrell, Duncan Eve, John A. Fordyce, Frederick H. Garrish, William A. Hardaway, H. A. Hare, James M. Holloway, Henry H. Mudd, Charles B. Nancrede, Roswell Park, John Parmenter, Joseph Ransohoff, Chauncey P. Smith and Edmond Souchon. Of the surgeons contributing to the volume all but two are members of the American Surgical Association. The editor states that the chapters on auto-intoxications and on the surgical sequelæ of acute non-surgical diseases are practically new. The first volume contains the more general subjects of surgical pathology, the general principles and theory of surgery, and surgery of the tissues. Of the chapters in the book, those on hyperemia, the blood, inflammation, ulcer and ulceration, gangrene, auto-infection, surgical fevers, surgical diseases common to man and animals, shock and collapse, scurvy and rickets, the sequelæ of other infections and diseases, poisoning by animals and plants, acute intoxications, cysts and tumors and surgical diseases of the osseous system (sixteen of the thirty-two) have been furnished by Dr. Park; that of syphilis by Dr. Fordyce; gonorrhea and its sequelæ by Dr. Belfield; control of hemorrhage, burns, scalds, frost bites and minor surgery by Dr. Parmenter; anesthesia by Dr. Hare; surgical diagnosis by Dr. C. P. Smith; methodic report of a surgical case, an elaboration of which appeared in this JOURNAL, by Dr. Souchon; wounds, gunshot wounds, processes of repair and treatment of wounds by Dr. Nancrede; surgical diseases of the skin by Dr. Hardaway; diseases of the muscles, tendons, tendon sheaths and fasciæ by Dr. Burrell; lymphatic vessels by Dr. Gerrish; surgical injuries and diseases of the veins by Dr. Holloway; injuries and diseases of the arteries, including aneurysm, by Dr. Duncan Eve; joint and joint structures and operations on joints by Dr. Joseph Ransohoff; fractures and dislocations by Henry H. Mudd.

The volume is well illustrated and well edited. As will be seen, the editor has himself been the author of one-half of the book.

Deformities: A Treatise on Orthopedic Surgery, intended for Practitioners and Advanced Students. By A. S. TUPPY, M.L., London, F.R.C.S., England. Illustrated with 15 plates, with 302 figures, of which 200 are original, and by notes of 100 cases. London and New York: McMillan & Co. 1896.

This volume is the outcome of several years' work by the author at the National Orthopedic Hospital, the Evelyn Hospital for Sick Children, and for some time in the Orthopedic

Department at the Westminster Hospital. The author, however, has not only made a record of his own work, but has given a fair account of the deformities as at present understood. It is pleasing to note that he has quoted freely from Bradford and Lovett of this country, and pays a graceful tribute to our Orthopedic Association by saying: "Above all, I can not omit to express my sense of indebtedness to the many admirable writers who have recorded their experiences in the transactions of the American Orthopedic Association."

There are nine chapters on deformities of the spine, constituting Section One; four chapters on deformities of the neck, chest and upper extremities, constituting Section Two; Section Three has only one chapter, that on rachitic deformities; Section Four, deformities of the lower extremities, has nine chapters; Section Five, ankylosis, congenital displacements, deformities resulting from cerebro-spinal paralyses and arthrodesis.

The illustrations are fair, and the type is large and clear. The book is timely, and, although conservative, is fully up to date. We quite agree with the author's estimate of the advantage of tarsectomy, in which he states: "Cases in which tarsectomy is necessary are very few and form a very small percentage." We commend the book as one being in every way satisfactory.

Ptomains, Leucomains, Toxins and Antitoxins, or the Chemical Factors in the Causation of Disease. By VICTOR C. VAUGHAN, Ph. D., M.D., and FREDERICK C. NOVY, Sc.D., M.D. Third edition, revised and enlarged. Lea Brothers & Co., Philadelphia and New York. 1896.

It has been apparent for some years that the study of bacteriology is fast returning to its ancient home in the chemical laboratory and that the products of bacteria are more important than the microbes themselves. We have heretofore expressed our opinion of the usefulness of this book, and have to state that that high opinion has been increased by glancing at the third edition. The work has been brought down to date and will be found entirely satisfactory as a book of reference on the subjects named, and as well for careful study. The arrangement and scope of the work remain the same as in former editions. The number of pages has been increased from 391 to 604. In these bacteriologic days, no medical man's library can be considered complete without a copy of this painstaking and exhaustive compilation. That the volume grows from edition to edition is evidence of the careful character of the work and the thoroughness with which the field of medical literature has been gleaned.

Wharton's Minor Surgery and Bandaging. By HENRY R. WHARTON, M.D., Demonstrator of Surgery in the University of Pennsylvania. New (third) edition. In one 12mo. volume of 594 pages, with 475 engravings, many being photographic. Cloth, $3.00. Philadelphia: Lea Brothers & Co., 1896.

The issue of the third edition of Wharton's Minor Surgery and Bandaging affords pleasing evidence of the correctness of the favorable opinion which we expressed on the issue of the first edition. We are of the opinion, however, that many of the illustrations might be omitted as being no longer applicable to modern methods. For example, the scissors figured on page 218 for skin grafting are scarcely used, as Thiersch's method has effectually supplanted the others. The old spring scarificator, on page 191, has probably never been seen by a physician under 35 years of age. Petit's Tourniquet, on page 283, might also be consigned to an antiquarian resting place. We do not see in the notice of fixed dressings the paper pulp bandage which has of late come into use, nor do we find in the book a statement of elastic bandages, such as supporters, suspension bandages, abdominal bandages, and other items which we would suggest should be included in future editions. These suggestions, however, do not detract from the general merit of the book, which is very great, and we trust that when we have the pleasure of reviewing the fourth edition, which is in our judgment bound to come soon, the author will bring his revision quite up to date. The publishers have done their part of the work well.

Transactions of the American Microscopical Society. Edited by the Secretary. Eighteenth annual meeting held at Cornell University, Ithaca, N. Y. Volume xvii. Buffalo, 1896.

The papers of this flourishing society are usually carefully edited and well illustrated; those in this volume of transactions are no exception to the rule. A large portion of the papers are decidedly interesting to medical men, such, for instance as "The Action of Strong Currents of Electricity upon Nerve Cells," by P. A. Fish; "The Comparative Morphology of the Brain of Soft-shell Turtle and the English Sparrow," by S. B. Gage; "Formalin as a Hardening Agent for Nerve Tissues," by William C. Krauss, and the "Process of Life Revealed by the Microscope, a Plea for Physiologic Histology," by Simon Henry Gage.

Eleventh Annual Report of the State Board of Health of the Commonwealth of Pennsylvania, 1896.—This report consists of the secretary's report, the minutes, reports of committees, and reports of inspections of various towns, cities and counties throughout the State, appendices on quarantine, etc. It shows a vast amount of labor on behalf of the board and the great benefit conferred upon the State. The board is fortunate in having as its secretary, Dr. Benjamin Lee, whose long and faithful service entitles him to recognition beyond the usual meed of State health officers.

PUBLIC HEALTH.

Another Source of Infection.—It is well known among occulists that the opera glasses which may be hired in most theaters frequently become the medium for spreading very serious eye diseases.—*Pop. Science News*, August.

Inspectors of Mercantile Establishments in New York.—The Board of Health September 1 appointed eleven inspectors, eight of whom were women. The law under which the factory inspectors are appointed directs that no child under 14 can be employed in a business establishment. Children between the ages of 14 and 16 must be provided with certificates from the board of health, showing that they are competent physically to do such work as would be required of them by their employers. The inspectors also look after the sanitary arrangement of all large business houses and workshops, with a view to the health interests of the employes.

Health in Michigan August, 1896.—Reports to the State Board of Health show that for the month of August, compared with the preceding month, typhoid fever, cholera infantum, dysentery, cholera morbus, erysipelas and remittent fever increased in area of prevalence. For the month of August, 1896, compared with the average for August in the ten years, 1886-1895, typhoid fever was much more than usually prevalent, and intermittent fever, consumption, remittent fever and inflammation of bowels were less than usually prevalent. Consumption was reported present in August, 1896, at 217 places, typhoid fever at 100, scarlet fever at 34, diphtheria at 34, whooping-cough at 27 and measles at 25.

High Infant Mortality in Canada.—The *Union Méd. de Canada* for August gives the statistics for 1895 in the Province of Quebec as follows: Population, 1,515,492; births, 58,653; deaths, 31,696, of which over eleven thousand were due to contagious diseases. Over ten thousand were children from a day to 1 year old, and 5,220 were children from 1 to 5 years; a total of 17,532 children, or more than half of the total number of deaths. It ascribes this high mortality to the lack of knowledge of preventive science in contagious diseases and to neglect. Where the parents are ignorant, it should be some one's

duty to instruct them in the necessity of isolation and disinfection and limit a contagious disease to the first one or two attacked. It also states that another cause may be the policies paid by certain life insurance companies, which speculate on the "little last-comer," so that the parents receive $75 to $80 if it dies. It protests against this practice as "immoral from every point of view." We note also that the deaths from intestinal diseases (4,068) were nearly twice as many as from tuberculosis (2,791).

Report of Committee on the Contagiousness of Tuberculosis in Hospitals; Isolation Recommended.—The committee appointed by the municipal authorities at Paris to investigate this subject, report the necessity of separate quarters for tuberculous patients, or at least the necessity of separating them from the rest in special wards appropriated to their exclusive use in the present hospitals, which they claim is feasible. Also the decentralization of tuberculous patients by removing them to special sanatoria in healthy localities. Letulle also suggests the establishment of curable tuberculosis colonies in Algiers and Corsica. They also demand that the patients and attendants should be carefully educated to understand the necessity of prophylactic measures, with penalties enforced for neglecting them. The attendants must also be selected with care, and all rejected that show any tendency to morbid conditions of the respiratory organs. They found that 1,296 of the total of 4,470 attendants connected with the hospitals of Paris were already diseased, 651 with bronchial affections and 526 with pulmonary tuberculosis. There have been 599 deaths among them during the past ten years, 217 due to tuberculosis and 154 to other diseases of the respiratory organs.

Greater New York City Health Department.—Chapter xix of the proposed charter, which relates to the Health Department, has been prepared by the Sub-committee on Charter of the Greater New York Commission for the consideration of the local sanitary officials. The chapter contains more that thirty thousand words, and has seven titles, as follows: 1, Powers and duties of the department and its officers; 2, marriages, births and deaths; 3, duties of physicians and others; 4, enforcements of orders and ordinances; 5, reimbursement for expenses; 6, abatement by suit; 7, tenement and lodging houses. In many respects the proposed chapter is a consolidation of the laws as they exist, and the title relating to tenement and lodging houses carries the intent of the Tenement House Commission. Of the head of the department the draft says: "There shall be a Department of Health, the head whereof shall be called the Health Commissioner. The Health Commissioner may be appointed and may be removed at will by the Mayor, and his term of office shall be coëxtensive with that of the Mayor appointing him, and until his successor shall have been appointed and qualified. The authority, duty and powers of the Health Commissioner shall extend over the waters of the bay, up to and within the quarantine limits, as established by law, but shall not be held to interfere with the powers and duties of the Commissioners of Quarantine or Health Officer of the Port. It shall be the duty of the Health Commissioner to make an annual report to the Mayor of the city of New York, of all the operations of his department for the previous year. The Mayor may at any time call for a more full report, or for a report upon any portion of the work of said Commissioner whenever he may deem it to be for the public good so to do." In regard to bureaus, the sub-committee provides for two, those of the Sanitary Superintendent and the Registrar of Records, as at present. Nuisances are to be treated as they have been heretofore, and the control or surveillance of noxious industries, trades or enterprises likely to be objectionable. The control of contagious diseases remains unchanged. These provisions apply to vaccination, disinfection and production of antitoxin by the Department of Health, and the sale of vaccin and antitoxin and disposition of proceeds of sale: "For the purpose of more effectually preventing the spread of smallpox by the thorough and systematic vaccination of all unvaccinated persons, and for the relief of persons suffering with diphtheria and other infectious diseases residing in said city, the Department of Health is hereby empowered to continue or organize a corps of vaccinators and of other physicians, within and subject to the control of the Bureau of Sanitary Inspectors, to appoint the necessary officers, keep suitable records, collect and preserve pure vaccin lymph or virus, and produce diphtheria antitoxin and other antitoxins, and add to the Sanitary Code such additions as will most effectually secure the end in view. Said Department of Health may take measures and supply agents, and offer inducements and facilities for general and gratuitous vaccination, disinfection, and for the use of diphtheria antitoxin and other antitoxins, and may afford relief to and among the poor of said city, as in its opinion the protection of the public health may require. Whenever the amount of vaccin lymph or virus collected by the said corps or of diphtheria antitoxin and other antitoxins produced shall exceed the amount required in the proper performance of its duties, the said Department of Health may authorize the sale of such surplus lymph or virus and diphtheria antitoxin and other antitoxins at reasonable rates, to be fixed by the Health Commissioner. The avails of such lymph or virus and diphtheria antitoxin and other antitoxins shall be accounted for and paid to the Chamberlain, and shall be set apart and constitute distinct funds, to be known respectively as 'the fund for gratuitous vaccination' and 'the antitoxin fund,' and they shall be subject to the requisition of the Health Commissioner for the purposes named in the preceding section. "In case of extreme measures being necessary to prevent the spread of disease, the Commissioner may cause any avenue, street, alley or other passage whatever to be fenced up or otherwise inclosed, adopt suitable measures for preventing all persons from going to any part of the city so inclosed, forbid all communication with the house or family infected with any contagious, infectious or pestilential disease except by means of physicians, nurses or messengers to carry the necessary advice, medicines and provisions to the afflicted, and adopt such means for preventing all communication between any part of the city infected with a disease of a pestilential, infectious or contagious character and all other parts of the city, as shall be prompt and effectual. There are other strenuous provisions against neglect that may cause the spread of disease. In regard to coroners, the draft provides for returns and reports and notices of calls for inquests, and the Sanitary Superintendent is given the power to order the burial of a body in certain circumstances. There is also a requirement that information in regard to diseases shall disseminate to local authorities elsewhere information that may be useful in regard to any disease. Quarantine officers and the department are to coöperate. The Sanitary Code of 1873, as amended, is declared to be binding except as it may be altered, amended or annulled by the Commisioner. The Health Commissioner is directed to establish offices in the Borough of Brooklyn and may appoint for this borough and that of Williamsburg a Deputy Commissioner and a Deputy Sanitary Superintendent and a Registrar of Records, with such clerical force as may be required. The Commissioner may also have a secretary and a chief clerk, and adopt a seal for the department and establish useful regulations. The draft provides for the appointment of fifty Sanitary Inspectors and may appoint eight men at the discretion of the Commissioner and there may be a sanitary engineer. Provisions in regard to the reporting and registration of births, marriages and deaths are the same as at present, and the duties of physicians and others are set forth as under the present regulations. The enforcement of laws and ordinances is set forth in a codification of existing laws.—*Standard Union.*

NECROLOGY.

JAMES W. ANAWALT, M.D., at the Military Soldiers' Home at Dayton, Ohio, August 26. He practiced medicine in Greensburg for over twenty-five years. About ten years ago he sustained a stroke of paralysis, from the effects of which he never fully recovered. Dr. Anawalt had an excellent military record, having served in the late war. He went as a surgeon of the Eleventh Regiment, Pennsylvania Volunteers, and afterward was chief surgeon of the Eleventh and One Hundred and Thirty-second Regiments. He graduated from Jefferson Medical College in 1855. He was 68 years old.

J. A. BLOUSE, M.D. (Department of Medicine, University of Pennsylvania, Philadelphia, 1891) of York, Pa., August 27, aged 28 years.——Henry L. Harrington, M. D., (Rush Medical College, Chicago, Ill., 1875) at Chicago, Ill., of consumption, August 31, aged 50 years.

E. NICAISE, M.D., Paris, age 58. The distinguished surgeon and writer, one of the editors of the *Revue de Chirurgie* and contributor to many medical journals, former president Société de Chirurgie, and of the medical section of the French Association for the Advancement of Science, professor of anatomy and clinic surgery. His most recent works are on the early history of surgery in France, to which he devoted the strength remaining from his long struggle with pulmonary disease. Among his other works are classic articles on cutaneous transplantations, surgical treatment of the nerves and veins, treatment of tetanus with chloral, sub-periostean amputations, arthrotomy of the knee, lesions of the intestines in strangulations, infective myositis, suture of the sphincter in anal fistulas, emphysema of the neck from rupture of the trachea during labor, and many others, the last mentioned having been read at the Académie de Médecine within a couple of months.

ARMAND DESPRÉS, M.D., age 62. A well known hospital surgeon and medical journalist of Paris, where his father had also been a hospital surgeon before him. He was noted for his ready wit and paradoxical views and conduct, "the intellectual type of the true gamin of the boulevard." He refused to recognize that surgery had made any progress since the sixties, and ridiculed the idea of asepsis and antisepsis, clinging to his prehistoric dressings and poultices to the last. The *Progrés Medical*, August 8, remarks that if he had lived in the United States, or even in Germany, his fantastic ideas on the subject of surgery might have brought him into serious trouble, adding, "Sometimes it is just as well to be living in France." But his pupils adored him. He served in the Chamber of Deputies with zeal and wisdom; was editor of the *France Médicale* for a while, and his numerous writings are valuable and interesting, although he repudiated the use of mercury. He was made Chevalier of the Legion of Honor for saving from captivity the wounded he was tending after a battle during the war. The Roman Catholic journals are lauding his memory for his indefatigable efforts to prevent the removal of the Sisters of Charity from the hospitals, to make way for trained lay nurses, while this is cited by other journals as a typical instance of the inconsistency of the professed freethinker and atheist.

DR. HENRY K. PUSEY died on the 2d inst., at Garnettsville, Ky., at the home of one of his daughters. Dr. Pusey was nearly 70 years of age. His early education was received at Mount Auburn and he received his degree of M.D. from the Medical Department of the University of Louisville. He practiced his profession in Louisville for a number of years and during the governorship of Hon. Proctor Knott he was appointed as Superintendent of the Insane Asylum at Lakeland, near Louisville, serving during that term and again under Governor Brown after four years' retirement. When he took charge, the number of inmates was 300 and the buildings inadequate and inconvenient; when he relinquished his office to make way for his successor appointed by Governor Bradley there were 1,200 inmates and the buildings modern in every respect and the methods of treatment the latest and best that has been devised. Dr. Pusey was a member of a number of societies devoted to the discussion of the insane, among them being the Medico-Psychological Association, the Medico-Legal Society of New York, the Southern Association of Superintendents of Insane Asylums and others. Dr. Pusey was a recognized authority upon hospital architecture and sanitation, and it was he who first suggested the advisability of building the houses for the insane no more than two stories high. The Board of Directors for the Asylum recognized the excellence of his ideas and the value of his accomplishments and they warmly approved all of his propositions for the improvement of the facilities of the institution. Knowing him thus the Directors gracefully testified their appreciation of him by naming the latest building addition to the institution "Pusey Hall," and put the name on a tablet of granite over the door. A year ago when the doctor gave up his work at the Asylum he was already a sick man and he told his close friends that he believed his life work was at an end. He accordingly began to set his affairs to rights and awaited the end with Christian fortitude. The board of directors passed suitable resolutions at a meeting held the Saturday after his death.

SOCIETY NEWS.

Reading (Penn.) Medical Association.—This association has elected the following officers for the ensuing year: President, James W. Keiser; vice-president, Daniel Longaker; secretary, S. T. Schmehl; treasurer, Walter Rigg; representative to the Board of Managers of the Reading Hospital, C. W. Bachman; censors, Henry Landis, J. L. Bower and C. M. Kurtz; curator, Henry Landis.

Douglas County (Wis.) Medical Society.—This society held its annual meeting at Superior, Wis., September 2. The officers elected for the ensuing year were: John Reeve, president; H. J. Orchard, vice-president; George Saunders, treasurer; C. S. Conkey, secretary; John Baird, L. B. Shehan and L. A. Potter, censors.

Mississippi Valley Medical Association.—At the twenty-second annual meeting at St. Paul, Minn., Sept. 15 to 18, 1896, the following papers will be read:

President's Address, H. O. Walker, Detroit, Mich.
Address on Medicine, Harold N. Moyer, Chicago, Ill.
Address on Surgery, Horace H. Grant, Louisville, Ky.
The Clinical Significance of the Child's Fontanelle, I. A. Abt, Chicago, Ill.
Proprietary Prescriptions, W. W. Allison, Peoria, Ill.
A New Operation for Cleft Palate, Truman W. Brophy, Chicago, Ill.
Some Rarer Forms of Keratitis, Carl Barck, St. Louis, Mo.
The Results of Operations *per se* in Cases of Tubercle and Cancer, A. C. Bernays, St. Louis, Mo.
Mastoid Diseases; Their Medical and Surgical Treatment, S. S. Bishop, Chicago, Ill.
Rupture of the Choroid Coat, J. H. Buckner, Cincinnati, Ohio.
Operative Treatment of Pterygium, Eduard Boeckmann, St. Paul, Minn.
Treatment of Some Inflammatory Diseases of the Gastro-Intestinal Tract, Gustavus Blech, Detroit, Mich.
Kola, Gustavus Blech, Detroit, Mich.
A Report of a Case Illustrating the Value of Secondary Physical Signs in the Diagnosis of Cardiac Diseases, R. H. Babcock, Chicago, Ill.
Rhinoscopic Examinations in General Practice, B. M. Behrens, Minneapolis, Minn.
Irregularities in Delivery Due to Short Umbilical Cord, Guido Bell, Indianapolis, Ind.
Gastro-jejunostomy in Gastrectasis, A. H. Cordier, Kansas City, Mo.

Conventional Treatment of Heart Diseases versus Positive Treatment, Ephraim Cutter, New York, N. Y.

Tonsillotomy by Means of the Cautery Blade, J. Homer Coulter, Chicago, Ill.

The Newer Remedies in Otology and their Results, G. I. Cullen, Cincinnati, Ohio.

Infant Feeding: The Anti-dyscrasic Action of Cow's Milk, M. F. Cupp, Edinburg, Ind.

Ether and Chloroform; Their Comparative Merits as Agents for the Production of General Anesthesia, W. S. Caldwell, Freeport, Ill.

Appendicitis; To Operate or not to Operate, J. H. Dunn, Minneapolis, Minn.

Syphilis as an Etiologic Factor in the Production of Tabes Dorsalis, C. Travis Drennan, Hot Springs, Ark.

Preventive Medicine, J. O. DeCourcy, St. Libory, Ill.

Certain Misconceptions Regarding Cardiac Murmurs and their Significance, Arthur R. Edwards, Chicago, Ill.

A New Method of Fastening the Broad Ligament in Alexander's Operation, J. Frank, Chicago, Ill.

Choledochotomy in America, with the Report of Four Cases, Alex. Hugh Ferguson, Chicago, Ill.

Pleuritic Effusions and their Treatment, G. Fütterer, Chicago, Ill.

Rational Operations for the Cure of Retroversions and Flexions, A. Goldspohn, Chicago, Ill.

A Demonstration of the Therapeutic Action of Antitoxins, E. M. Houghton, Detroit, Mich.

Stirpiculture, Florence W. Hayes, Terre Haute, Ind.

On the Importance of Physical Signs other than Murmur in the Diagnosis of Valvular Diseases of the Heart, Jas. B. Herrick, Chicago, Ill.

The Neural Factor in Clinical Medicine, C. H. Hughes, St. Louis, Mo., Honorary Fellow of the Chicago Academy of Medicine.

The Value of Medicinal Antipyretics in View of Newly Acquired Knowledge Respecting the Nature of Acute Infectious Diseases, Talbot Jones, St. Paul, Minn.

Treatment of Syphilis, J. H. Jelks, Hot Springs, Ark.

The Physiologic Treatment of Typhoid Fever, Elmer Lee, Chicago, Ill.

The Pathology and Treatment of Suppurative Salpingitis, F. F. Lawrence, Columbus, Ohio.

The Lumbar Enlargement of the Spinal Cord, L. Harrison Mettler, Chicago, Ill.

Indications for and Demonstrations of Removal of the Gasserian Ganglion, J. B. Murphy, Chicago, Ill.

The Surgical Treatment of Pyloric Obstruction, Wm. J. Mayo, Rochester, Minn.

Conditions which may Simulate Organic Obstruction of the Rectum, Thos. H. Manley, New York, N. Y.

Multiple Operations in Pelvic Disease, H. P. Newman, Chicago, Ill.

Nerve Sutures and other Operations for Injuries to the Nerves of the Upper Extremities, A. J. Ochsner, Chicago, Ill.

Submucous Linear Cauterization; A New Method for Reduction of Hypertrophies of the Conchæ, N. H. Pierce, Chicago, Ill.

The Treatment of Experimental Tuberculosis in Animals by the Use of Blood Serum, Paul Paquin, St. Louis, Mo.

The Pathology of Idiocy, Frederick Peterson, New York, N. Y.

Chorea, Curran Pope, Louisville, Ky.

Electro-diagnosis and Electro-therapeutics Simplified, Hugh T. Patrick, Chicago, Ill.

Trunk Anesthesia in Locomotor Ataxia, Hugh T. Patrick, Chicago, Ill.

The Use of Oxygen in Chloroform Narcosis, C. B. Parker, Cleveland, Ohio.

My Favorable Experience with Diphtheria Antitoxin, D. C. Ramsey, Mt. Vernon, Ind.

The Physiology of the Peritoneum from Experiments, Byron Robinson, Chicago, Ill.

Some Fads and Fallacies of Modern Rectal Surgery, Leon Straus, St. Louis, Mo.

Pregnancy Complicating Operations on the Uterus and its Appendages. Remarks with Cases, R. Stansbury Sutton, Pittsburg, Pa.

The Significance and Occurrence of Capillary Pulsation in Nervous Diseases, A. E. Sterne, Indianapolis, Ind.

Twenty-seven Cases of Croup, E. W. Sanders, St. Louis, Mo.

The Necessity af Vivisection, E. B. Smith, Detroit, Mich.

Gunshot Wound of the Liver; Report of Case Involving Diaphragm and Lung; Operation Successful but Fatal Termination Two Weeks Later from Pneumothorax, J. H. Taulbee, Mt. Sterling, Ky.

Further Report on the Treatment of 500 Cases of Gastritis (Demonstrations), Fenton B. Turck, Chicago, Ill.

The Rapid Cure of Gonorrhea, Fred C. Valentine, New York, N. Y.

Some Unusual Cases of Appendicitis, Weller Van Hook, Chicago, Ill.

Mastoidectomy in Caries of the Temporal Bone, K. K. Wheelock, Ft. Wayne, Ind.

A Further Contribution on the Use of Dry Heat in the Treatment of Chronic Joint Affections, W. E. Wirt, Cleveland, Ohio.

A Further Contribution to the Ocular Treatment of Epilepsy, Casey A. Wood, Chicago, Ill.

The Decadence of the General Practitioner and the Reign of the Specialist, D. S. Maddox, Marion, Ohio.

Additional papers have been promised by the following:

Augustin H. Goelet, New York, N. Y.; Henry Hatch, Quincy, Ill.; R. C. Heflebower, Cincinnati, Ohio; Bransford Lewis, St. Louis, Mo.; I. N. Love, St. Louis, Mo.; A. H. Meisenbach, St. Louis, Mo.; H. O. Pantzer, Indianapolis, Ind.

MISCELLANY.

P.-A. M. C. Delegate.—Dr. H. B. Lowry, of Omaha, has been appointed delegate from Nebraska to the Pan-American Medical Congress.

Jefferson Appointment.—Dr. Roy Harris, who has been practicing medicine in Atlanta, Ga., for the past five years, and teaching chemistry in the Southern Medical college, has accepted a professorship in the Jefferson Medical college of Philadelphia. He will teach pathology in that institution. He graduated from Jefferson College.

Dr. Carlos F. McDonald, president of the New York State commission in lunacy, has resigned, the resignation to take effect September 30, and Gov. Morton has appointed Dr. Peter M. Wise as Dr. McDonald's succcessor, the appointment to take effect October 1. Dr. McDonald's term would expire by limitation in May, 1901, but he retires to resume private practice.

Husband Can Recover Expense for Medical Attendance.—In Minnesota, the supreme court of that State holds, in McDevitt v. City of St. Paul, decided July 24, 1896, a husband may maintain an action against a municipal corporation for the recovery, among other things, of moneys expended by him for medical attendance on his wife on account of personal injuries received by her by reason of a defective sidewalk.

A Question for the Jury.—It is a question for the jury to determine, the supreme court of Minnesota holds, in the case of Hale v. Life Indemnity and Investment Co., decided July 17, 1896, whether a man can be addicted to the drink and morphin habits, and grossly intemperate, and his family and his intimate business and social associates not discover it. It can not be assumed that he can thus conceal these habits, if he in fact has them.

Marinesco's Pilgrimage.—The *Semaine Médicale* has sent Marinesco on a scientific pilgrimage to the different centers of progress to interview the leading neurologists of the day. His letters from London, Edinburgh, Brussels and Liège, as they have been published the last few weeks, form an interesting *résumé* of the present status of neurology, and contain some things that have not yet been officially announced in the way of biologic investigation.

Preventive Treatment of Hydrophobia.—Dr. A. Lagorio informs us that 532 patients have been treated at the Chicago Pasteur Institute since its inauguration July 2, 1890. The patients treated have been divided into three classes: 1. Those bitten by animals recognized and ascertained to be rabid by the control experiment made in the laboratory, or by the deaths of other persons or animals bitten by the same animal (183). 2. Those bitten by animals recognized to be rabid by the symptoms of rabies shown during life (237). 3. Those bitten by animals strongly suspected to be rabid (112). Only two deaths

have been reported, giving a mortality of 0.37 per cent. There were 483 persons bitten by dogs, 24 by cats, 13 by horses, 5 by skunks, 2 by wolves, 1 by a mule, 1 by a pig, and 2 by hydrophobic human beings.

Illinois' New Hospital for the Insane.—The corner stone of the new Northwestern Hospital for the Insane was laid at the village of Watertown, eight miles east of Rock Island, by Governor Altgeld, Sept. 5. The Thirty-eighth General Assembly made an appropriation of $100,000 for an institution to be located north and west of the Illinois river. The site comprises 400 acres on the bluffs overlooking the Mississippi river, which was purchased and presented to the State by Rock Island County and city and the town of Moline. The plans contemplate a system of eight groups of buildings, to be arranged in radiating lines from the main building, connected by hallways.

Must Give Notice of Trial for Insanity.—An inquiry and trial in the probate court in Kansas, had upon an information charging one with being a person of unsound mind and incapable of managing his own affairs, the court of appeals of that State holds, In re Wellman, decided June 12, 1896, should only be had after notice to the person alleged to be insane, and after opportunity has been given such person to be present at the trial, in person or by counsel. An adjudication of insanity that is made without such notice and opportunity to be heard, it holds is a nullity, and void, and a commitment thereunder to the insane asylum is illegal.

Physicians Can Testify as to Stains.—After both an examination thereof, under a microscope and a chemical analysis, the supreme court of South Carolina holds, in the homicide case of State v. Martin, decided July 11, 1896, that physicians are clearly entitled as experts to give their opinion as to the character of stains found on a piece of floor. That the latter was not taken from the house in which the defendant lived at the time of the alleged homicide until a few days before the trial, after the defendant had moved from it, and while it was occupied by another person, it is further held did not render it inadmissible in evidence, though the force of the evidence was perhaps weakened by these circumstances.

Gleanings.—Confirmation of favorable effect of lecithin on the quality of the blood, general growth and psychic development (dogs). Milk from typhoid patient produces characteristic agglutinations the same as serum. (See this JOURNAL, page 382.) (*Semaine Méd.*, August 5.)——Editorial urges immediate intervention in all wounds of the abdomen caused by firearms. Many lives would be saved if the internal perforations were sutured at once as a matter of course, no matter how trifling they may appear. (*Union Méd.*, August 8.)——First decade of the Paris Pasteur Institute, 17,337 patients treated, 83 deaths. (*Gaz. Méd. de Liège*, August 13.)——7,857 of the 29,747 students in the universities of Germany are studying medicine. (*Wien. Klin. Rundsch.*, August 9.)——Mackenrodt asserts that the only way to avoid infection in hysterectomy for carcinoma is to perform it entirely by thermo-cauterization. (*Gaz. Méd. de Paris*, August 15.)——Ten per cent. formol compresses found very effective in relieving and improving inoperable ocular tumors. (*Semaine Méd.*, August 12.)——London has 600,000 houses, with an average of 7 inmates to each; New York has 115,000 with 18 inmates each, and Paris only 90,000 with 25 inmates each. (*Journal d'Hygiène*, August 6.)

The Phonendoscope.—The newly invented phonendoscope is designed to be used by physicians and surgeons for detecting the presence of disease by sound. The instrument consists of a circular flat metal box or tympanum, having on its one surface two apertures for the attachment of the rubber ear tubes, while the other surface is formed by a thin disk which is readily thrown into vibration. The best results are obtained by simply applying this disk to the surface to be examined. By an ingenious contrivance a second disk can be superposed upon this one and a vulcanite rod attached to the former, so that the area of auscultation may be extremely circumscribed. The conduction of the sounds is only slightly diminished by the use of this rod, which thus combines the principle of the solid stethoscope with that of the tympanum. The rod furnished with the instrument is about two inches in length, but it is stated that there are other rods of various lengths, to enable the "phonendoscopist" to receive sound vibrations of the natural cavities which communicate with the exterior of the body. It is useful as an aid to auscultation, and yet not likely to entirely supersede the use of the stethoscope. It may also be found useful in class demonstration, since it would be easy by means of branched tubes to enable several persons to listen at the same time. The instrument will be particularly useful for the following purposes: In auscultation of the sound of the respiratory organs, in the circulation of the blood, and of the digestive organs in the healthy body as well as in the sick; the sounds made by the muscles, joints and bones; the sound of the capillary circulation; the slightest sounds produced in any diseased condition of the body; hence it is possible to draw on the body dimensions, the position or any alteration in the position of the various organs and of the fluids which have gathered in the most important cavities in the body.—*Pop. Science News*, August.

Coffin Carrying.—It is observed with some curiosity that our distinguished guest, His Excellency, Li Hung Chang, with certain other members of his suite, carry coffins with them as part of their baggage. It is said that this custom arises from distinction in classes whereby as it is highly probable that the remains of the illustrious dead might be defiled by touching or mixing with the common or unclean carcasses not belonging to the celestial or one of the same class. It has been said that one of the best means of longevity is the frequent contemplation of death and the tomb and it would seem that the oriental custom has its advantages, as in case of accident it would be unfortunate to be compelled to depend upon an American undertaker, who might prove a veritable iconoclast in handling the remains of a distinguished Chinaman.

Compensation Must be Allowed.—A servant employed in the Merchant's Hotel in the city of Detroit, Mich., was taken ill June 1, 1894. Her disease was pronounced measles by a physician. As she failed to improve, the proprietor of the hotel telephoned the board of health that he feared the case was smallpox. In reply, the contagious disease clerk at the health office said it was all right, only a case of measles, and it would be best to carry out the orders of the physician referred to. June 6 the girl died. An investigation was made by the health board and the case pronounced smallpox. The officers of the board of health immediately took possession of the hotel and placed it in quarantine, confining therein thirteen persons, several of whom were subsequently stricken with smallpox and detained in the hotel and there treated by the board of health. The quarantine continued until June 29, after which the board of health disinfected the premises and destroyed a considerable portion of the furniture which had become infected. They contended that what was thus done by them was necessary in the interest of the public welfare, and that the loss must be borne by the proprietor of the hotel. But the supreme court of Michigan takes a different view of it. Safford v. Board of Health of City of Detroit, decided July 8, 1896. It says that it thinks it is within the contemplation of the law that, when property is used or destroyed or services rendered under such circumstances as in this case, compensation should follow. It also holds that it is the duty of the board of health to pass upon the question of the amount of compensation, and where they refuse utterly to award compensation, that a writ of mandamus may be invoked to compel them to do so.

Can Answer Hypothetic Questions.—If a physician, who has professionally attended upon and prescribed for a person, and has also observed such patient while not thus in attendance, can give an opinion as to his condition, based upon facts he observed while not acting professionally, and excluding from his mind what he observed while in attendance, the appellate division of the supreme court of New York says that it can see no reason to doubt that he may also give an opinion upon a hypothetic state of facts stated in a question which excludes all knowledge of the condition of the patient which he derived while in professional attendance. The only objection, it further states, in the case of Meyer v. Standard Life & Accident Insurance Co., decided July 7, 1896, that can be urged to a doctor, who has been in medical attendance upon a person, giving an opinion in answer to a hypothetic question as to the condition of his patient, is that the knowledge he derived while in attendance might affect his answer. But the same objection exists to the physician's giving an opinion founded upon observation of his patient while not in actual professional attendance. Mr. Justice Landon, in a concurring opinion, says that the trial judge in the court below decided, in effect, that the attending physician could not answer the hypothetic question solely upon its hypothetic basis, but would to some extent base his answer upon his professionally acquired knowledge of the patient's actual condition. His reviewer, on the other hand, thinks that, as this is a question of fact, it should be decided upon evidence. It can not be assumed, as a matter of law, that the physician could not answer the question as a hypothetic one, wholly uninfluenced by his personal knowledge of the patient's condition. He therefore suggests that the proper practice would be to examine the attending physician preliminarily as to his ability in this respect.

The Richard Formogen Disinfecting Lamp.—This little apparatus resembles a lamp in its appearance and is as easy to manage, while it generates formic aldehyde in sufficient quantity and strength to disinfect perfectly any apartment, allowing 36 grams of methyl alcohol to the cubic meter. The vapors of the methyl alcohol pass through a wire screen into a reacting chamber enclosed in platinum, with twenty holes through which the heated air enters, producing brilliant incandescence of the platinum and transforming the vapors of the alcohol into formic aldehyde, according to the familiar formula: $CH_4O+O=CH_2O+H_2O$. Infected gauze is perfectly sterilized in six hours, and the vapors have such penetrating power that infected threads rolled in 250 grams of cotton are found absolutely sterile.—*Gaz. Méd. de Liége*, August 20, from the Brussels *Clinique*.

Louisville.

FEEBLE MINDED INSTITUTE.—There seems to be a disagreement between the governor and the commissioners of this institution as to the advisability of rebuilding the institution which was burned not long ago. The governor is not in favor of its being rebuilt and in this he is opposed by the commissioners. There seems to be some trouble in regard to the collection of the insurance money as it is claimed that there was negligence on the part of the officials in not keeping enough water in the tank for use in case of fire. The children are all comfortably housed in the out houses which have been used for shops and which were used for a similar purpose after the fire in 1889. It is understood that a majority of the commission favor rebuilding and that will likely be done as soon as arrangements can be made as to the insurance money.

THE PUBLIC SERVICES.

Army Changes. Official List of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from Aug. 30 to Sept. 4, 1896.

Lieut.-Col. Alfred A. Woodhull, Deputy Surgeon General, granted leave of absence for one month and ten days, to take effect about Sept. 15, 1896.

Major Henry S. Turrill, Surgeon, upon being relieved from duty at Ft. Riley, Kan., is ordered to Willets Point, N. Y., relieving Major Egon A. Koerper, Surgeon. Major Koerper, upon being thus relieved, is ordered to Ft. Crook, Neb., for duty.

First Lieut. Frederick P. Reynolds, Asst. Surgeon, is relieved from duty at Ft. Clark, Texas, and ordered to Ft. McIntosh, Texas, for duty, relieving First Lieut. Robert S. Woodson, Asst. Surgeon. Lieut. Woodson, on being thus relieved, is ordered to Jackson Bks., La., for duty at that station, relieving Capt. Junius Powell, Asst. Surgeon. Capt. Powell, on being thus relieved, will report to the president of the examining board, appointed to meet at the office of the Surgeon-General of the Army, for examination for promotion, and upon conclusion of examination is ordered to Ft. Riley, Kan., for duty, relieving Major Henry S. Turrill, Surgeon.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending Sept. 5, 1896.

P. A. Surgeon E. R. Stitt, to duty in the Bureau of Medicine and Surgery.
P. A. Surgeon C. H. T. Lowndes, detached from the naval hospital, Philadelphia, and ordered to the Washington navy yard.
Asst. Surgeon L. Morris, ordered to the naval hospital, Philadelphia.
Asst. Surgeon G. D. Costigan, ordered to the naval laboratory for instruction.

Marine-Hospital Changes. Official list of changes of station, and duties of Medical Officers of the U. S. Marine-Hospital Service, for the sixteen days ended Aug. 31, 1896.

Surgeon P. H. Bailhache, detailed to represent Service at meeting of American Public Health Association, Aug. 24, 1896.
Surgeon George Purviance, relieved from duty at Philadelphia, Pa., and directed to proceed to St. Louis, Mo., and assume command of Service, Aug. 25, 1896.
Surgeon J. B. Hamilton, when relieved from duty at Chicago, Ill., to proceed to San Francisco, Cal., and assume command of Service, Aug. 25, 1896.
Surgeon J. M. Gassaway, granted leave of absence for thirty days from Oct. 1, 1896, Aug. 24, 1896.
Surgeon John Godfrey, when relieved from duty at San Francisco, Cal., to proceed to Chicago, Ill., and assume command of Service, Aug. 25, 1896.
Surgeon W. A. Wheeler, when relieved from duty at Ellis Island, N. Y., to proceed to Cincinnatf, Ohio, and assume command of Service, Aug. 25, 1896.
Surgeon C. E Banks, to proceed from Washington, D. C., to Boston, Mass., for temporary duty, Aug. 21, 1896.
P. A. Surgeon D. A. Carmichael, granted leave of absence for thirty days from Sept. 5, 1896, Aug. 17, 1896.
P. A. Surgeon Eugene Wasdin, granted leave of absence for five days, Aug. 25, 1896.
P. A. Surgeon S. D. Brooks, directed to rejoin station, St. Louis, Mo., and when relieved from duty at that place to proceed to Port Townsend, Washington, and assume command of Service, Aug. 25, 1896.
P. A. Surgeon J. H. White, relieved from special duty at Key West, Fla., and directed to rejoin station at New York, N. Y., Aug. 24, 1896 Detailed for duty in connection with immigration service at Ellis Island, N. Y., Aug. 25, 1896.
P. A. Surgeon P. M. Carrington, to proceed to Chicago, Ill., and assume temporary command of Service, Aug. 25, 1896.
P. A. Surgeon J. J. Kinyoun, detailed to represent Service at meeting of American Public Health Association, Aug. 24, 1896.
P. A. Surgeon T. B. Perry, detailed to represent Service at meeting of American Public Health Association, Aug. 24, 1896.
P. A. Surgeon G. T. Vaughan, detailed for duty in connection with immigration service at Philadelphia, Pa., Aug. 25, 1896.
P. A. Surgeon J. O. Cobb, when relieved from duty at Cincinnati, Ohio, to proceed to New York, N. Y., for duty, Aug. 25, 1896.
P. A. Surgeon W. G. Stimpson, relieved from command of Service at Port Townsend, Washington, on arrival of P. A. Surgeon S. D. Brooks, Aug. 25, 1896.
Asst. Surgeon E. K. Sprague, when relieved from duty at New York, N. Y., to rejoin his station at Boston, Mass., Aug. 27, 1896.
Asst. Surgeon H. S. Cumming, when relieved from duty at Norfolk, Va., to proceed to Evansville, Ind., for temporary duty, Aug. 25, 1896.
Asst. Surgeon J. B. Greene, to proceed from Baltimore, Md., to Cleveland, Ohio, for temporary duty; upon completion of which to rejoin station, Aug. 25, 1896.

Change of Address.

Clarkes, Wm. E., from Chicago to 435 Park Av., River Forest, Ill.
Fest, F. T. B., from Plank Road, Mich., to Amoy, China.
Isbecter, R. T., from 1923 Indiana Av. to 218 Wabash Av., Chicago, Ill.
Mackee, L. V. G., from Brant Rock to Attleboro, Mass.
Marr, W. L., from 5451 Lake Av., Chicago, to 7404 Madison Av., Grand Crossing, Ill.
Mullen, T. R., from Marcus to Akron, Iowa.
Wimberly, J. S., from Sanford to Sunlight, Ga.

LETTERS RECEIVED

Angier Chemical Co., Boston, Mass.; Allen, J. M., Liberty, Mo.; Adkinson, L. G., New Orleans, La., (2); Abbott, W. C., Ravenswood, Ill.
Brumbaugh, G. M., Washington, D. C.; Burr, C. B., Flint, Mich.; Bailey, F. & E. Co., Lowell, Mass.
Christopher, H., St. Joseph, Mo.; Cannaday, A. A., Roanoke, Va.; Caldwell, M. S., Freeport, Ill.; Clark, M. C. & Sons, Albany, N. Y.
Dibrell, J. A. Jr., Little Rock, Ark.; De Courcy, J. O., St. Libory, Ill.; Daniel, J. B., Atlanta, Ga.
Fest, F. T. B., Plank Road, Mich.; Frisbie, J. F., Newton, Mass.; Frei, G. A. T. Co., Boston, Mass.
Gould, Geo. M., Philadelphia, Pa.
Hartman, F. E., Denver, Colo.; Hypes, B. M., St. Louis, Mo.; Haven, O. D., Ravenna, Ohio; Hoggard, W. D., Nashville, Tenn.
Jansen, E., Astoria, Ore.; Jackson, Edward, Philadelphia, Pa.
Kebler, E. A., Cincinnati, Ohio, (2).
Leaming, J. K., Cooperstown, N. Y.; Lehn & Fink, New York, N. Y.
Mulford, H. K. Co., Philadelphia, Pa.; Miller, F. A., Chicago, Ill.; Mikkelson, M., Wells, Minn.; Moore's Newspaper Subscription Agency, Brockport, N. Y.; Mink, Arthur E., St. Louis, Mo.; Maire, L. E., Detroit, Mich.; Mettler, L. Harrison, Chicago, Ill.
Quin, Henry W., New York, N. Y.
Rogers, W. B., Memphis, Tenn.; Rogers, L. L., Kingston, Pa.; Reed & Carnrick, New York, N. Y.
Sherman, E. M., Stuart, Iowa; Sloman, S. A. & Co., Detroit, Mich.; Shearer, Gilbert H., Philadelphia, Pa.; Silver, D. R., Sidney, Ohio; Strueh, Carl, Chicago, Ill., (2); Seidler, W. J., Newark, N. J.
Totman, D. M. Syracuse, N. Y.
Vaughan, V. C., Ann Arbor, Mich.
Wiley, Z. K., Baltimore, Md.; Woody, Samuel E., Louisville, Ky.; Waxham, F. E., Denver, Colo.